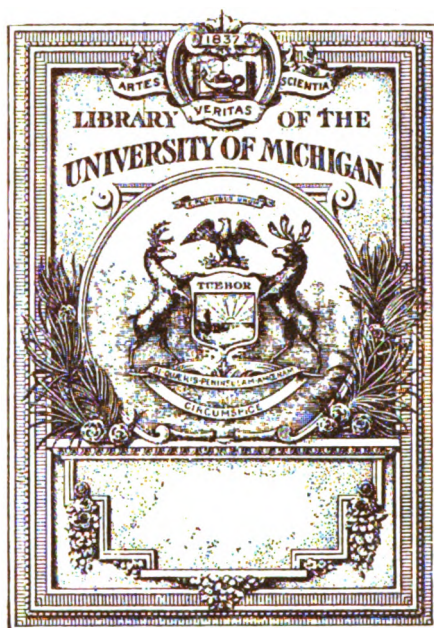


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MAY,
1922

FARM

PRICE
20 CENTS
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MECHANICS

TITLE REGISTERED, U. S. PATENT OFFICE

A Monthly Magazine Featuring Farm Improvements
Machinery, Equipment, Farm Buildings



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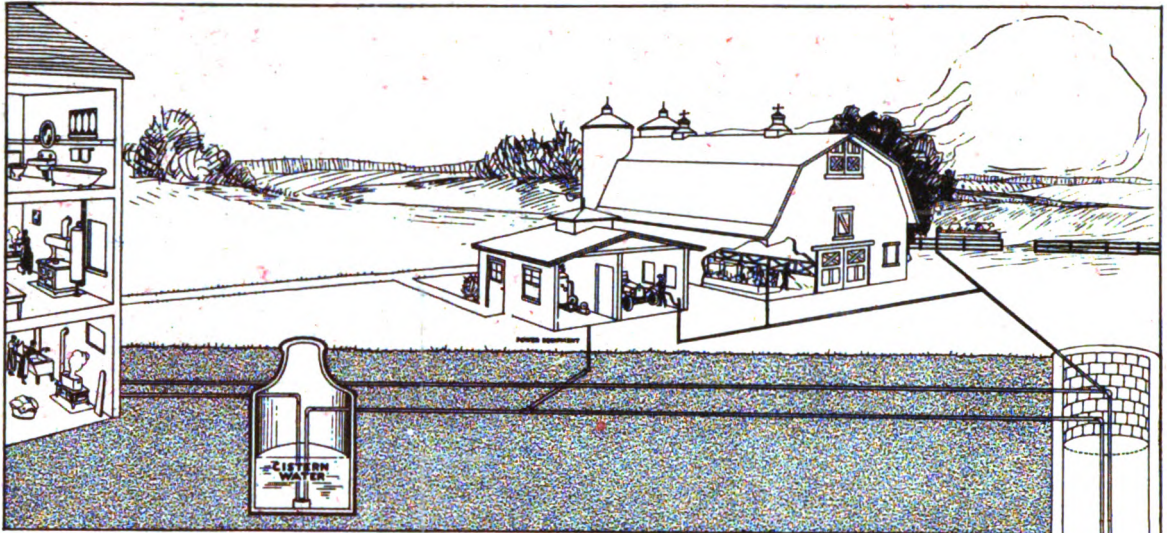
Quality Farm Specialties

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MILWAUKEE CORRUGATING CO.

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Running Water-- Small Payments!

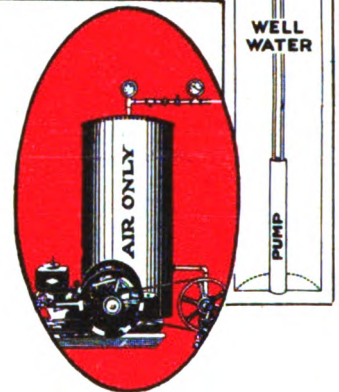
Have a Water System--Pay as You Use It!

For a small payment down you can equip your farm with the Milwaukee Air Power Water System -- and pay for it as you use it!

Those hot, sticky days of mid-summer will soon be here. Imagine what it will mean to have all the fresh, cool water you need, for the stock, the plants, the house -- making chores easier, housework lighter.

The Milwaukee System pumps water *direct from the well* as you use it. No water tank -- no stored water. Can't freeze. Strong pressure in case of fire.

Our trained representative lives near you -- he will help you plan your system. Send for his name, and we will also mail you our big illustrated book. Write now -- and get the full benefit of your system this summer.



Easy and Cheap to Operate

The Milwaukee System is the most economical to install and the cheapest to operate of any high class water system. It is made in many different sizes for different farms. And best of all -- you can pay for it in from three to twelve months as suits your convenience.

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886 B. Third Street Milwaukee, Wis.





POWER
for
Barn Yards



POWER
for
Farm Homes



POWER
for
Running Water

110 VOLT D.C.

**KOHLER
AUTOMATIC**
Power & Light

This compact plant combines, exclusively, the following features of simplicity, convenience and economy: (1) no storage batteries, (2) automatic start and stop, (3) automatic governor tapering fuel to current being used, (4) standard 110 volt electricity, (5) 1500 watt capacity.



POWER
for
Farm Work

A Proved Power and Light Plant —without Storage Batteries

ALL OVER THIS COUNTRY, everywhere, farmers are turning their interested attention to the electrical power and light plant that is *without storage batteries*—the Kohler Automatic.

It is the reliable, the capable, the durable plant. It is the plant that has the minimum upkeep expense.

You get all of the electrical current generated—without storage battery losses—standard, "city" 110 volt electricity up to 1500 watts; bright, mellow light, and labor saving appliances, several appliances at a time.

Merely a turn of any switch on the Kohler Automatic circuit starts or stops the generation of electricity. No waste or leakage of electricity when the plant is not running.

The Kohler differs from all other power and light plants.

The four-cylinder engine is quiet and steady, and like every other part of the plant is backed by forty-nine years' experience in quality manufacture.

The automatic governor tapers the gasoline consumption to the current used.

The price is only \$595, complete, no more than you are asked for ordinary, less capable plants which lack the Kohler's exclusive features. Price includes a 55-gallon gasoline storage tank. Convenient time payments can be arranged. The Kohler Automatic has been approved by the Fire Underwriters' Laboratories.

Send for interesting, illustrated booklet. Dealers, write or wire today.

KOHLER OF KOHLER

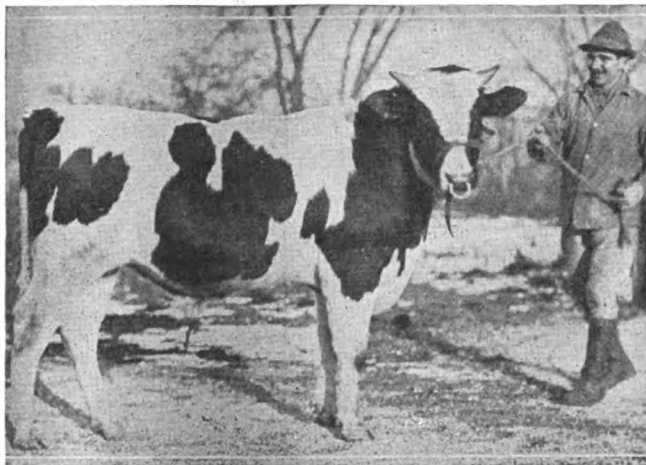
Kohler Co., Founded 1873, Kohler, Wis. Shipping Point, Sheboygan, Wis.

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Pabst Creator

Born December 19, 1921

A son of Creator and a grandson of King Pontiac Champion, sold for \$3,500 at the Brentwood Sale, while the average price per animal was \$800.

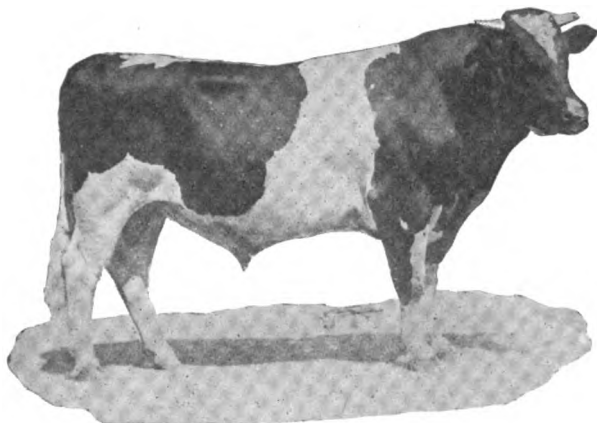
Creator's sons and daughters, all from daughters and granddaughters of King Pontiac Champion, are outstanding individuals. They will bring the best of the Holstein blood lines to your herd.

Write now for sales list describing a son of Creator from a Champion dam.

Pabst Stock Farms

Waukesha County
OCONOMOWOC,
WISCONSIN

Federal Supervision



CREATOR

Born Jan. 3, 1917

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FARM MECHANICS

MONTHLY FARM MAGAZINE ON TRACTORS
FARM MACHINERY, BUILDING IMPROVEMENTS AND
MODERN AGRICULTURE

Member of Audit Bureau of Circulations

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May, 1922

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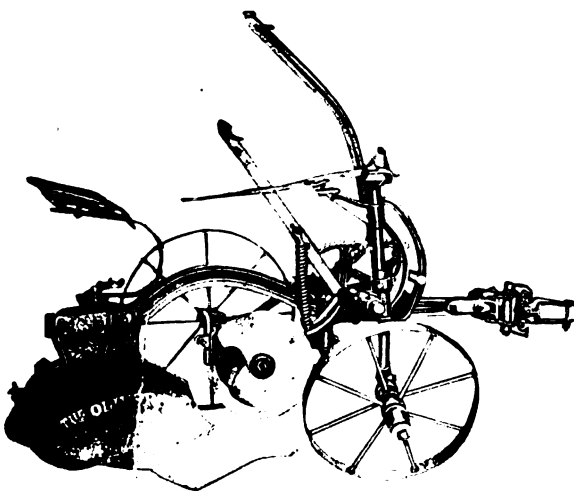
TO thousands of practical farmers who are satisfied with nothing less than perfect plowing accomplished with minimum effort of both team and operator, the James Oliver No. 11 Sulky needs no introduction.

Among horse drawn sulkies, this plow for many years has occupied a unique position with particular plow men. Its simplicity, light draft, ease of operation—and most important of all—its ability to do the kind of plowing that means more bushels per acre has created leadership for the “Jimmie” Oliver No. 11 that is unparalleled.

Your Oliver dealer can supply you with the No. 11, fitted exactly for your soil requirements.

Oliver Chilled Plow Works

South Bend, Indiana





YOUR LIFE

and what Lincoln Light will do to make it more enjoyable. That's a subject you're interested in for it is always timely. Lincoln Light does not need your constant attention for it is self-cranking—self-starting—self-oiling. The 205 A. H. battery is guaranteed for five years. It furnishes your light cheaper than city rates. Doesn't that mean something to you?

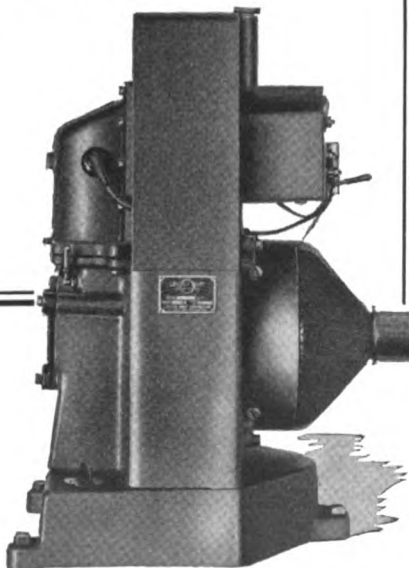
A 3-H. P. 2-cycle motor without valves, cams, pushrods or gears—direct connected to a 32-volt, 1250-watt generator—both inclosed in a strong, compact housing completes the outfit, which has but 3 MOVING PARTS.

Lincoln Light Corporation

GRAFTON, WISCONSIN

**DEALERS
WANTED**

*some
desirable
territory
still
open*



WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

Short Talks with Our Subscribers

For More Intensive Farming

THE other day Mr. W. A. Radford, president of FARM MECHANICS, returned from a three weeks' trip thru the west that extended to the Pacific Coast. Mr. Radford's observations, made with the intelligent eye of a man who was a practical farmer in his youth and who has been keenly interested in farming all his life, were for the benefit of FARM MECHANICS readers and will be reflected in the editorial columns of this magazine during the next few months.

Here is one thought Mr. Radford brought back with him: We of the Middle West are not making the most of what nature gives us. Out there lack of intermittent rains makes irrigation the great problem. Every drop of water is stored and the supply drawn upon sparingly. Yet with this handicap their crops are great and profitable, despite the huge investment in reservoirs and canals and pumping plants.

Great dependence in this section is placed on tractors for all kinds of field work and for power needs. Practically every farm, or "ranch," as they term farms out there, has one or more tractors. The owners say that tractors have proven their economy, not only in dollars and cents, but in their ability to accomplish a huge amount of work when in a short time it is necessary to get in the crops and during harvest.

Farmers everywhere are optimistic and the talk of cutting acreages of various crops has died out. The whole farming industry is going ahead, bent wholly on large production at the lowest possible cost.



Our Third Anniversary

THIS May issue begins the fourth year of FARM MECHANICS, the first issue of the magazine being May, 1919. FARM MECHANICS has grown steadily, both in point of circulation and in advertising patronage, and we hope that it is a better magazine editorially, for that is what we have tried to accomplish. The success FARM MECHANICS has achieved is due in great part to the loyalty of its readers, to whom we wish, on our Third Anniversary, to extend our appreciation. We feel, and we hope you do, too, that the relations between the publishers and editors and the readers have been more than that of business men and customers, and are grateful for that fact, for it adds to the joy of our work. Thanks again.



AFTER you have taken an inventory of the farm equipment, livestock and holdovers from last year's crop, take an inventory of what improvements are needed in the home. Then figure out which are the most essential and plan to put them in. A water pressure system, it is generally conceded by farm women, is the greatest labor saver.

Editor FARM MECHANICS.



The *National* Fresh Water System

*for Farms and
Country Homes*

THE air operated system that delivers an abundant supply of water direct to the fixtures, at an even temperature, cool and invigorating, *fresh from the well.*

The system that gives you all the conveniences of fresh running water the year around, in your house and barns, at the turn of a faucet.

NATIONAL
ELECTRIC
FRESH WATER
SYSTEMS

*When you
want water,
you want it
fresh.*

*Write for free
booklet today!*

*No water storage tanks to freeze in winter.
No stale and stagnant water in summer.*

The power unit, which may be installed in the basement or in any other convenient place, furnishes the compressed air, which in turn operates the pump in the well.

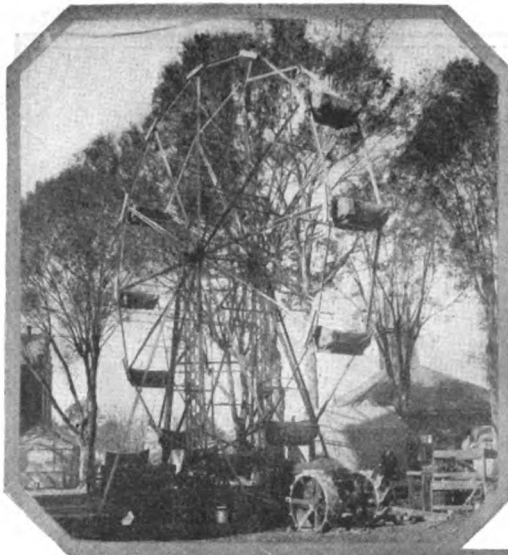
With this one power unit water may be drawn from several sources at the same time, giving you both hard and soft water by merely adding an additional pump to the equipment.

The National Motor Driven System is entirely automatic in its operation and requires no further attention than the occasional replenishing of oil to the motor and compressor.

National systems are easy to install; cost little to operate and are furnished for either electric motor or gasoline engine drive, in a combination of sizes to meet every individual requirement.

You ought to learn more about the National.

National Utilities Corporation
Milwaukee Wisconsin



The Farm Tractor Is Pressed Into Service for many Power Jobs. Here it is running the Ferris wheel, it having taken the place of the gas engine that went out of commission.

"Ain't Nature Wonderful." Some time during the glacial period she left this rock balanced as you see it in the picture. It is called "Balance Rock" and is one of the attractions of the Garden of the Gods, Colorado. It stands on a four-foot triangular base and leans to one side enough to fall, but it does not. Measurements show that it weighs more than 500 tons.



One of the Small Boy's Summer Joys Is Watching the Circus Unload in the Early Morning. This picture shows one of the largest of the traveling shows unloading the elephants, which help with the hard work about the circus trains and lot.



Remember How Your Mother Used to Tell You to "Take Your Thumb Out of Your Mouth." Now they're fixing the youngsters so that their thumbs won't go in. It is a rough ring that is so constructed that it will stick on the thumb and prevent it from being inserted in the mouth.



While the Nations Are Junking Their Ships of War, the Youngsters Have Declared No Holiday. This is especially true in England, where London children enjoy rides in little mechanically propelled boats. It will be noted that the boat has a flat bottom and can't be turned over while the youngsters ride about the park lagoons.

Willard

Stands Punishment

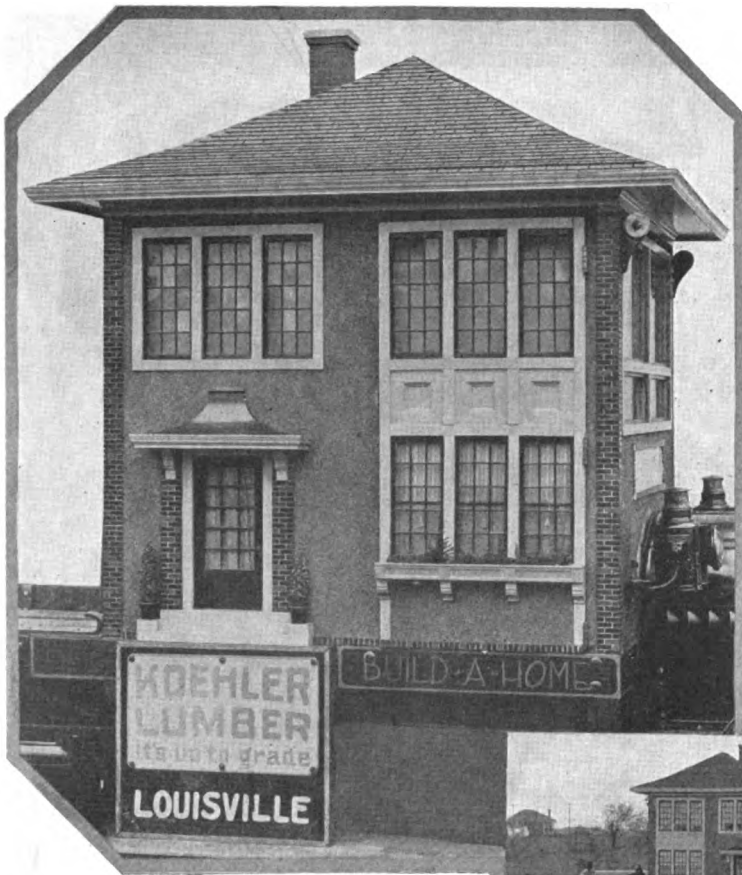
The standards of quality and workmanship of the Willard Ford-size Battery are the same as those which are so rigidly followed in building batteries for the more expensive cars. Every Willard Battery is built to stand punishment, and the Willard Battery for Fords is no exception.

Ask the nearest Willard Battery Station about the Willard which has stood the punishment of years of service on all makes of cars; the Willard Threaded Rubber Battery which is so much better that it is standard original equipment on 195 cars and trucks; or the Willard All-Rubber Battery, made especially tough, wear resisting and economical for hard Ford service. *The prices will please you.*

WILLARD STORAGE BATTERY COMPANY, Cleveland, Ohio

Made in Canada by the

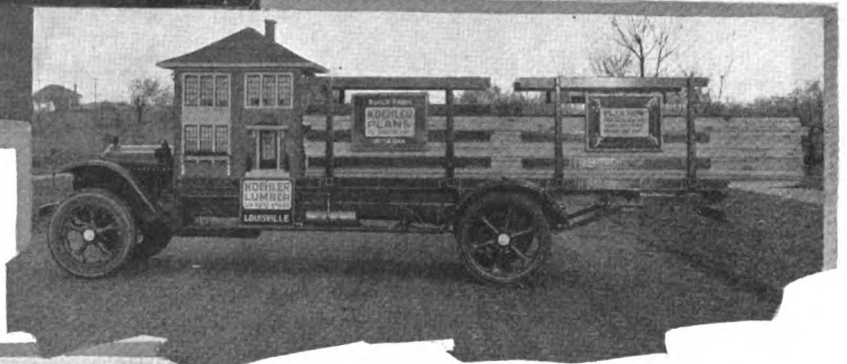
Willard Storage Battery Company of Canada, Limited, Toronto, Ontario



The Koehler Lumber Co., of Louisville, Ky., Believes in Advertising Home Building. This house is the cab of the company's delivery truck and is constructed just as a real house would be with timbers and bricks and stucco and windows.



Practically Ever Since Sugar Cane Has Been Harvested the Work Was Done by Hand. Now it can be done by machinery, thru the invention of George D. Luce, of New Orleans, La. As will be seen, the harvester follows the design and operates after the manner of a corn harvester. The inventor is 80 years old.

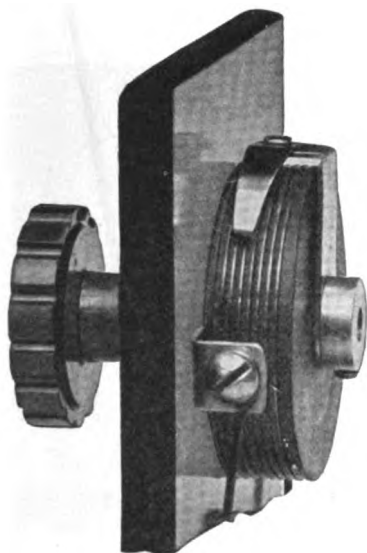


W. Cecil Gage Owns a Large Farm Near Fishkill, N. Y., and to Get Around It Has Constructed a Private Railroad. The country in that section of New York is mountainous and rough, and the work of laying the tracks required that a number of bridges be built. The picture shows the train crossing one of them.

Four Years Have Not Changed the Battlefields of France Very Much Other than to Produce Turf in the Shell-Torn Fields. The picture below shows a field in the Chemin Des Dames district, where there was fighting almost continuously thruout the war. The government does not allow the farmers to set plow into the field because of the danger from unexploded shells, but the cattle graze there.



JENKINS' VACUUM TUBE RHEOSTAT



Capacity 2 Amp.

Total Res. 12 Ohms.

Radio Fans!

The capacity of your receiving set will be greatly increased by using the Jenkins' Rheostat.

It will give you greater radius of action and finer detection of all signals.

**The
Price
is..... \$2.00**

Send check or money order, and the rheostat will be delivered at your door, prepaid. We guarantee satisfaction or your money back.

Order Today.

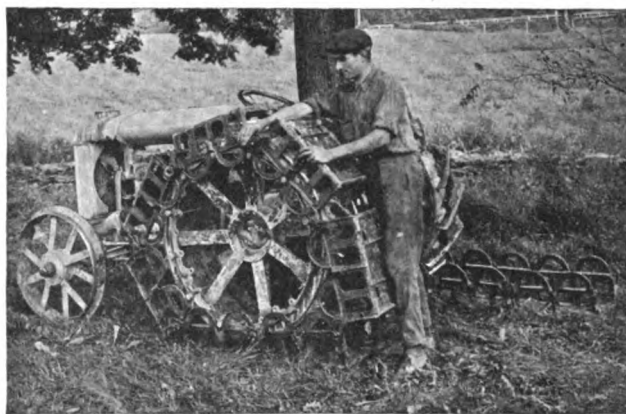
Descriptive literature and dealers' proposition on request.

W. B. Sales Co.

59 East Van Buren Street
CHICAGO

MILLER Tractred

TRADE MARK
"ON and OFF like a TIRE CHAIN"



Secure Links With Two Pins

Chapter III—Preparedness

With a MILLER TRACTRED you have the satisfaction of knowing that your Fordson is ready for **any kind of work** that either a round-wheel or track-layer machine can do in **any kind of soil** and in **any kind of weather**. That's a very practical form of business insurance for any farmer.

Today you are going to mow a meadow where the footing is good. You want speed rather than power—leave the Tractred at home.

Tomorrow you have a manure-spreading job in soft newly plowed land—**put on** the Tractred.

Next night it rains. Yet there's a piece of late plowing that must be finished up—the Miller Tractred will do the job for you, and save a couple days delay.

So it goes throughout the season—the Miller Tractred, "on-and-off like-a-tire-chain"—is like a Regiment of Reserves—always ready to "save the day" when working conditions are such that **no** round wheel tractor can be expected to get through.

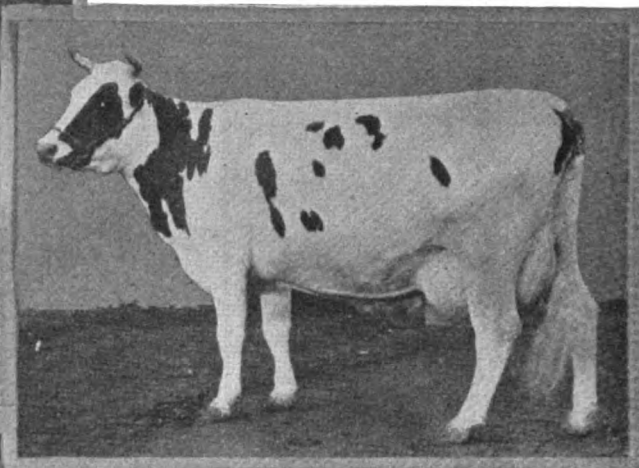
Recently in Walla Walla, Washington, when the soil conditions are the worst in the country a Fordson equipped with Miller Tractred plowed up a 52 per cent grade on a 28 per cent hill-side, pulling two 14-inch bottom plows to a depth of nine inches, in intermediate or plowing speed.

*Write for circular, or call on
your Fordson Dealer*

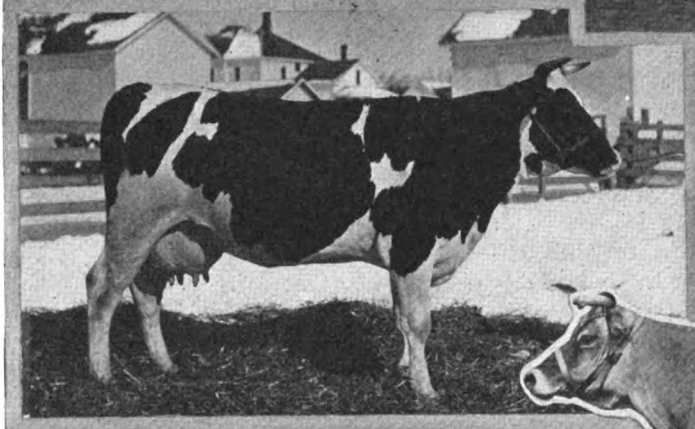
Mitchell Blair Company
59A E. Van Buren Street CHICAGO



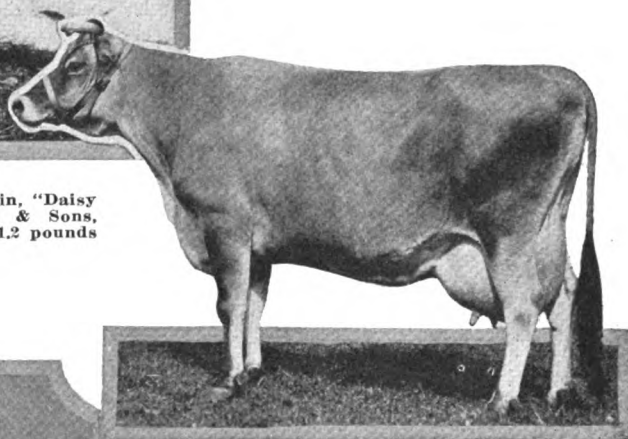
Without a Doubt the Most Popular Farm Dog Is the Collie, or Shepherd Dog. Here is one of the prize animals of that breed and its owner, Miss Dorothy Stout, of Philadelphia. The dog's name is "Gleniffer Blue Pansy," and it recently captured the blue ribbon at the Philadelphia dog show.



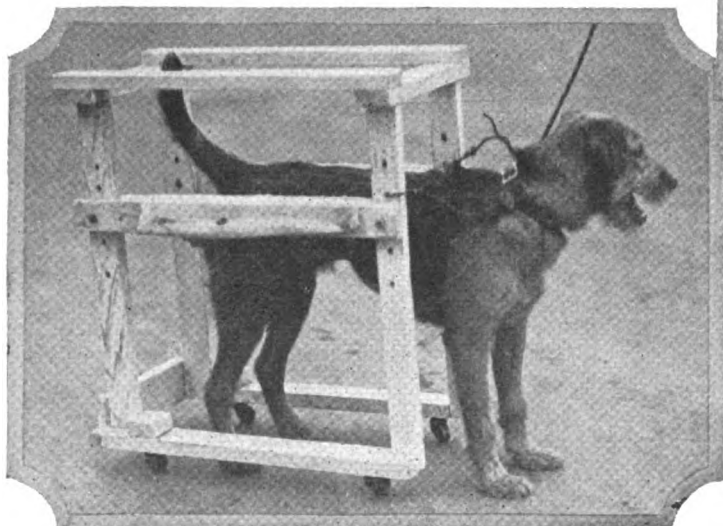
Here Is the New World's Record 4½-Year-Old Holstein Heifer, "Princess Aaggie Polkadot DeKol," Owned by H. P. Fischer, of Shakopee, Minn. She recently completed a year's work with a record of 31,600.7 pounds of milk and 1,315.6 pounds of butter.



Above Is the New World's Record Yearling Holstein, "Daisy Aaggie Ormsby, 3rd," Owned by John Erickson & Sons, Waupaca, Wis. Daisy's record for a year was 22,151.2 pounds of milk and 1,088.28 pounds of butter.



And Here Is a New Champion Jersey, "Fauvie's Star 313018," Owned by Col. A. V. Barnes, of New Canaan, Conn. "Fauvie's Star" is the first 20,000-pound Jersey, having made 20,616 pounds of milk and 1,095.90 pounds of butter fat in a year's test.



At the Left Is "Sandy," a Pure-Bred Airedale, That Had Its Back Broken. Usually when an animal breaks its back it is destroyed, but "Sandy's" owner and a veterinary saved him by using a plaster cast and later this "crawler."

The Work of the Month

MAY is the planting month. In the corn belt as a rule there is no killing frost after May 10. The first of June sees practically all the spring planting finished, and the work of cultivation in full swing.



RAINFALL decreases as the summer advances. Crops that are in and have a start get the advantage of the frequent rains, and cultivation helps retain the moisture for the dry times in July and August.



FREQUENT cultivation gets the best crops. Keeping the top soil from baking and cracking and supplying a fine mulch between and around the plants are the reasons for cultivation. This is especially true of the corn.



PLANTING corn seed that has not been tested puts the job of discovering whether or not it is fertile up to Nature. Nature will test it, but when she finds that it not good it usually is too late to make a second planting. Testing every kernel that goes into the planter is the best insurance a corn grower can get.



ONE of the best times of the year to get lime into the soil is when plowing for corn. Lime has little effect on corn, but if cowpeas or soybeans are sown with the corn, the crop of legumes will be double or triple thru an application of finely grown limestone, or commercial lime.



CORN for the ensilage crop should be planted as early as possible in the spring. Well-matured and tested seed should be used. Early planting means earlier growth and stronger growth, and enables the cutting and storing of the ensilage when it is full of juice and the stalks are green.



ALL the farm implements and machines will be needed at frequent intervals now. The tractor has been at work doing the spring plowing and discing. Soon it will be hauling the cultivator. All the implements and machines must be in the best condition to get the most economical results. Rainy days are good days for implement and machinery inspection.



AN electric light on the tractor enables it to be worked at night. When weather conditions have delayed field work, it often-times is necessary to work overtime. A light makes night work comparatively easy and enables the tractor owner to get a crop in on time.



ALL the livestock, especially cattle and hogs, should have access to pastures now. Young pigs for feeders should be castrated before they are weaned, and given a treatment of hog cholera serum. Get the best serum and if the work is not done by a veterinary, use care to prevent infection by having clean hands and sterile instruments.



FREQUENT change to fresh pasture keeps the lambs healthy. Rotation of pastures helps control stomach worms and other parasites of sheep. Dip the entire flock in a sheep dip 10 days before shearing. Be sure the fleeces are dry when the shearing is done.



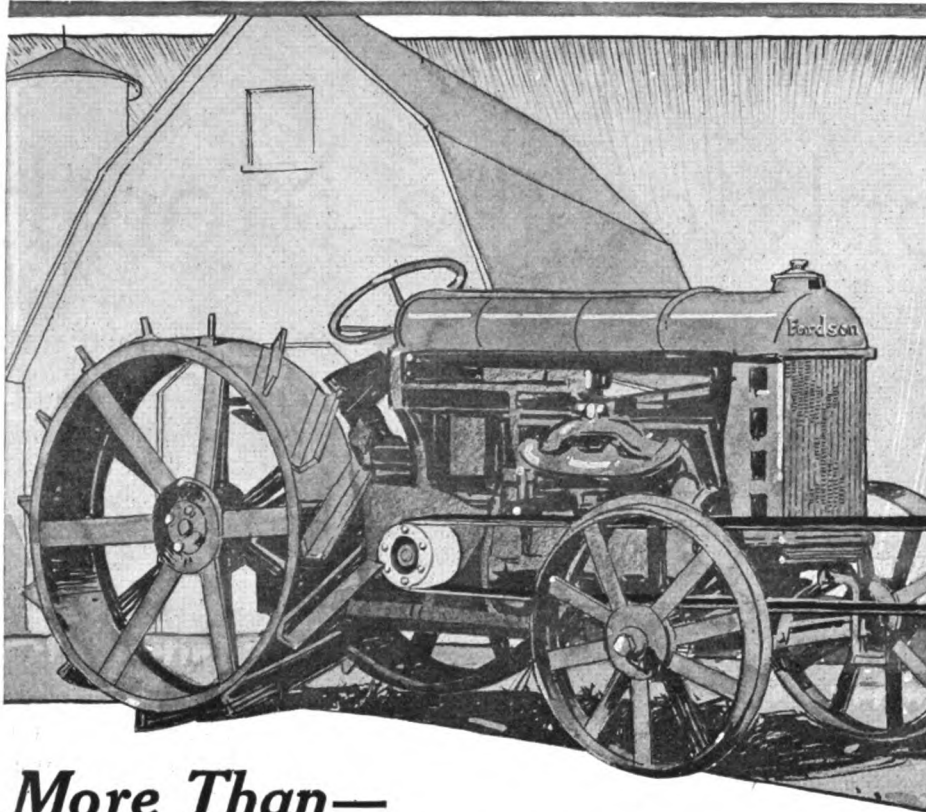
MANY a why grub, wireworm, and cutworm has met, for him, an untimely fate and provided a meal for the blackbirds, meadowlarks and other birds that follow the plow. Do nothing to discourage them; on the other hand welcome these devourers of crop-destroying pests.



WELL painted farm buildings look better and are a source of pride and satisfaction to the owner. But paint serves a greater purpose than to add to the beauty of the landscape. Paint prevents decay—it earns its cost many times in prolonging the life of the building it covers. This is painting time.



Well Painted Buildings Defy the Elements.



More Than—
100,000
 On Fordson Tractors Alone

ROCKWOOD *The Drive Pulley*, is standard equipment for the belt attachment on Fordson Tractors and on these dependable threshers: Avery, Aultman-Taylor, A. D. Baker, Banting, Cape-New Model, Frick, Gopher, Huber, Illinois, International Harvester, Minneapolis, New Racine, Port Huron, Wood Bros., Westinghouse. Rockwood *The Drive Pulley* insures maximum operating capacity, reduces belt-slip and saves belt-wear. Order Rockwood *The Drive Pulley* for your old machinery—and don't buy a new machine without it.

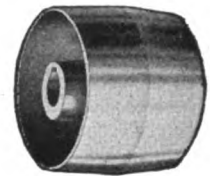
Ford Dealers: Fordson users know the advantages of Rockwood, *The Drive Pulley*. You can sell this BETTER pulley to them for their separators, silo fillers, feed mills, saw rigs, etc. And you can get this business (and profit) with very little effort. Write today for details of our dealer's proposition.

THE ROCKWOOD MANUFACTURING COMPANY
 1950 English Avenue INDIANAPOLIS, U. S. A.

All the Power—All the Time

ROCKWOOD, PULLEY SERVICE

Evolution Of
The Farm-Power
DRIVE PULLEY



THE PLAIN IRON PULLEY

The first belt pulleys were made of iron. They were soon found inadequate, because the belt slipped on the plain iron surface, causing it to wear and waste power.



THE COVERED PULLEY

The covered pulley was an improvement over the iron pulley, because it reduced belt-slip. However, wear and exposure to the weather loosened the covering and it stripped, leaving the sharp rivets exposed to gouge and ruin an expensive belt.



[Section removed to show construction]

ROCKWOOD
The DRIVE PULLEY

ROCKWOOD, *The Drive Pulley* completely overcomes these objections. It consists of a solid block of tough, wear-resisting fiber (seldom less than two inches thick) built around and into a heavy cast iron hub. The end-grain is exposed as a surface to grip the belt surely and firmly—a surface made up of layer upon layer of fiber hydraulically compressed and cemented—a surface that renews itself automatically as it wears and wears and WEARS.

Rockwood, *The Drive Pulley*, has no "cover" to strip. It is ALL pulley, and is thoroughly waterproofed.



AS IT SEEMS TO US

Jim Crow is Waiting for the Corn to Sprout

THOUSANDS of scarecrows rear their grotesque bodies above the sprouting cornfields each spring but still Jim Crow continues to break the commandment, "Thou shalt not steal." Shining objects such as metal or glass suspended from poles also worry him but slightly. It is apparent that modern methods are necessary to make him lose his taste for tender young sprouts.

Some farmers, the more kind-hearted ones, scatter soaked corn about the field and along the edges just as the young sprouts are coming thru. As the corn is susceptible to attack for only a week or ten days, this plan often works very well.

Others, less desirous of furnishing Jim Crow with a square meal, tar their seed corn. This seems to prevent the fellow from eating the seed, but he frequently keeps on pulling the plants just for the sport of it, or perhaps to get even with the farmer.

Either coal tar or pine tar is used for this purpose, says H. R. Cox, extension specialist in farm crops of the New Jersey State Agricultural College, who adds that if coal tar is chosen fluid tar, such as oven-gas tar, is the one to use. Fluid pine tar suitable for this may be purchased by the can. A tablespoonful of either kind seems to be sufficient for one-half bushel of seed, which is stirred thoroly until there is a small amount of tar on nearly every grain. After the seed has been tarred, it is customary to stir in some road dust, lime or other dry powder to dry it off. It can then be planted with the planter, but not quite so easily as if the corn were not tarred.

More hard-hearted farmers, a few of them at least, will soak some corn in strychnine solution and scatter this about the field. This will kill the crows, but it exposes chickens and other useful birds to serious danger. If a small quantity of corn is so treated, and the dead bodies of a few crows thus killed are hung up on poles in the corn-field, this seems to be a fairly efficient method. The wily birds are

not slow about telling their friends and relatives that here is a field to beware of.



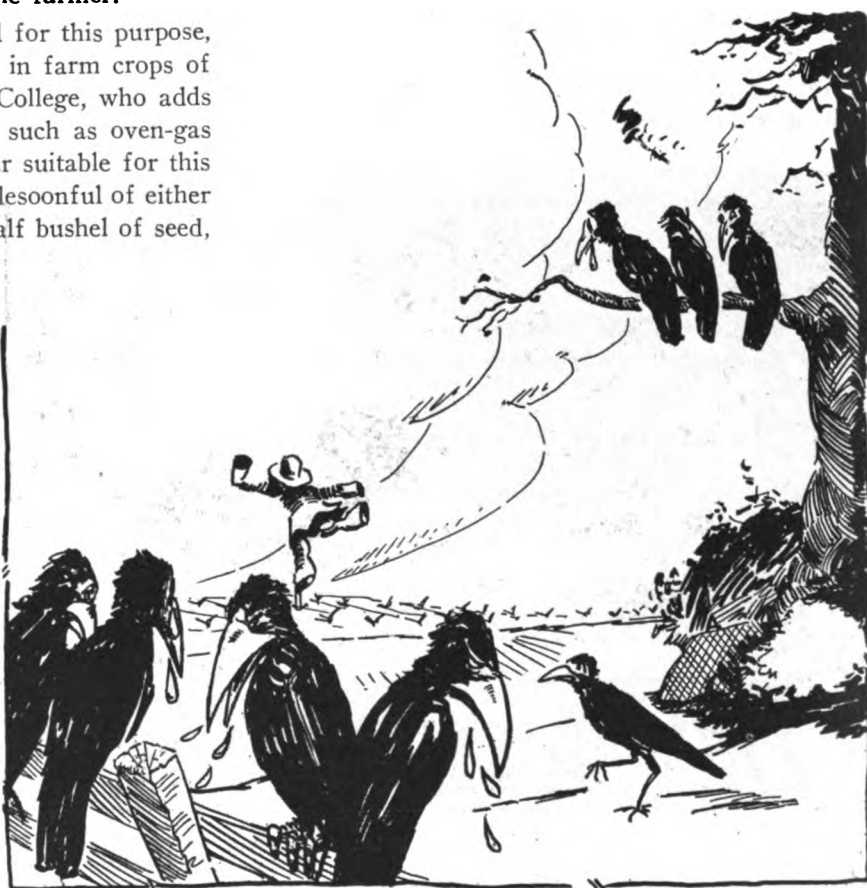
GROWING chicks should have free range on grass land. This does not mean that they should not be fed. Having access to a good mash and a supply of clean water at all times has much to do with successful poultry raising. As soon as the breeding season is over, separate all the males so that the eggs will be infertile. Infertile eggs keep better, and hens without males will lay just as well.



PLANT alfalfa; it feeds your soil with nitrogen, your cattle and hogs with protein, and your heart with contentment.



MANURE saved is money saved. Spreading it as made is the best practice.



Jim Crow Is Waiting for the Corn to Sprout.

What a Radio-Telephone Outfit Is

Simple Explanation of Various Parts of Instrument That Connects Home with Far Away Stations by Wireless

By EDWARD T. BICAK

(Head of the Department of Radio Engineering, Extension Division, United Y. M. C. A. Schools)

IT can almost be said without exception that no home in the United States is out of range of at least one of the radio telephone broadcasting stations. They are located in a sufficient number of cities thruout the country and operate over ranges great enough to practically reach everybody. An occasional letter from a very remote and unheard of region verifies this statement, as well as gives evidence of the appreciative manner in which this service is received. Often a listener may be so located as to be within range of several broadcasting stations, thereby having some choice of programs. If the lecture being broadcasted from one station does not appeal to such a person, the simple throw of a switch will "tune out" the lecturer and bring in music from some other station. Again, if the particular music being broadcasted at that moment is disliked, another throw of the switch may allow the selection of a broadcasting station where a "jokesmith" happens to be billed for that hour; or the market report from still another station may have the strongest appeal, and so on. Of course, this is not a common case, but developments seem to indicate that it will be before long.

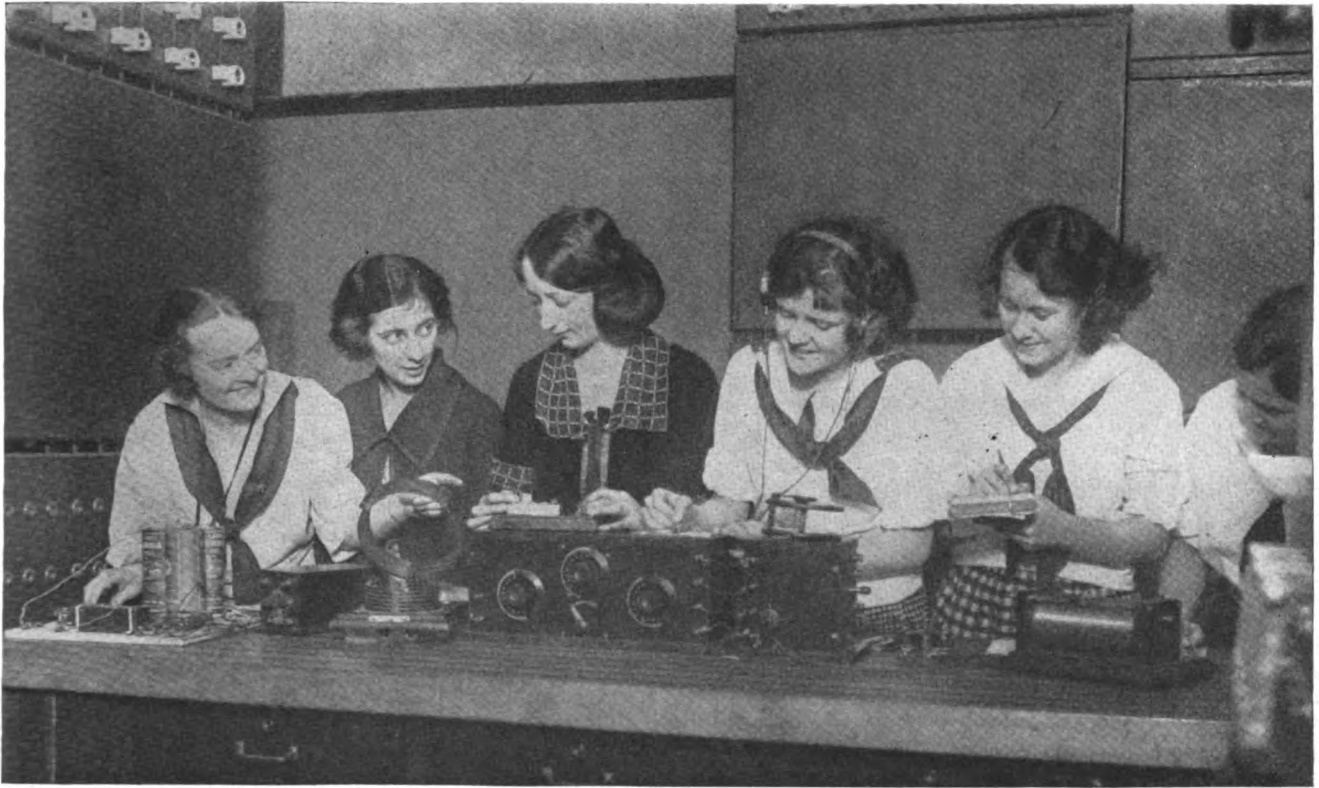
There is only one requirement for the farmer to take advantage of this form of modern entertainment which, by the way, is absolutely free of charge. The farm home must be equipped with some type of radio receiver

apparatus. The exact type, however, will depend primarily upon the distance over which reception is to be effected. Obviously the apparatus must be sufficiently sensitive to be responsive over the particular distance it is located from the broadcasting station. For short ranges of, say, 25 miles or so, the cheapest radio receiver is found to function satisfactorily. Such an instrument is purchased at a price between \$15 and \$25, and costs even less if one cares to go to the trouble of constructing it. This construction is relatively simple and can be undertaken within the short period of a single evening. If one lives between 25 and 100 miles from a broadcasting station a somewhat more sensitive receiver is generally required. For ranges in excess of 100 miles even greater sensitivity is necessary, and so on, the radio receiver to be employed depending chiefly upon the distance separating the broadcasting station from the home. Aside from the increased cost, the number of controls that it is necessary to manipulate in order to properly adjust the more sensitive radio receivers introduces the only other factor which may be objectionable to some farmers. This added factor is most responsible for the poor results a beginner may sometimes experience, but since no one remains a novice long after he equips the home with a radio receiver, this factor is only temporarily detrimental and need not be regarded too seriously.

The simplest form of radio receiver is no larger than the average cigar box having a hinged cover. It has one control in the form of a knob and lever, or handle and dial, which regulates the number of turns of wire in a coil that forms part of the receiving circuit, or performs an equivalent function. The turning of this knob to the right or left makes it possible to "tune in" the desired station and eliminate other stations. In addition to this coil there is provided what is termed a detector. The detector is the most essential piece of apparatus in the circuit, for without it the signals could not be made audible to the listener. It is a sort of translating device which makes possible the conversation of the received electrical energy into its audible form. This translation may be effected either by the direct transformation



Herbert Hoover, Secretary of the U. S. Department of Commerce, Which Has Control of All Wireless Communication. Secretary Hoover is a radio enthusiast and is now at work framing regulations that will give the greatest latitude in the use of radio outfits without one interfering with another.



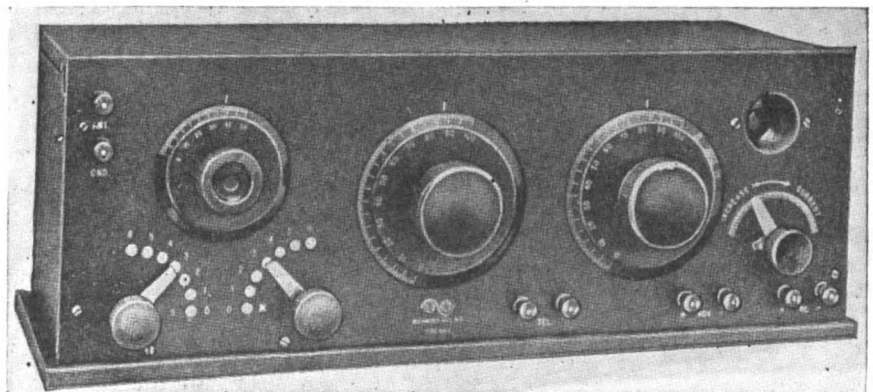
High School Girls Are Studying Radio-Telephone Operation in the Technical Schools. Not only do they learn how the radio-telephone is operated but the scientific principles that permit communication by wireless.

of the receiver currents into a form suitable for the operation of the telephone receivers or other indicator, or by means of the control of local energy by the energy received. The simplest detector consists of a small piece of galena, silicon, or iron pyrites about the size of an eraser on a lead pencil. This mineral is supported in a small metal cup and a fine wire is made to bear lightly upon it. The most sensitive spot of the crystal with which the wire should make contact is readily found by experiment and is made known to the listener when the loudest response is heard in the receivers which are worn over the ears.

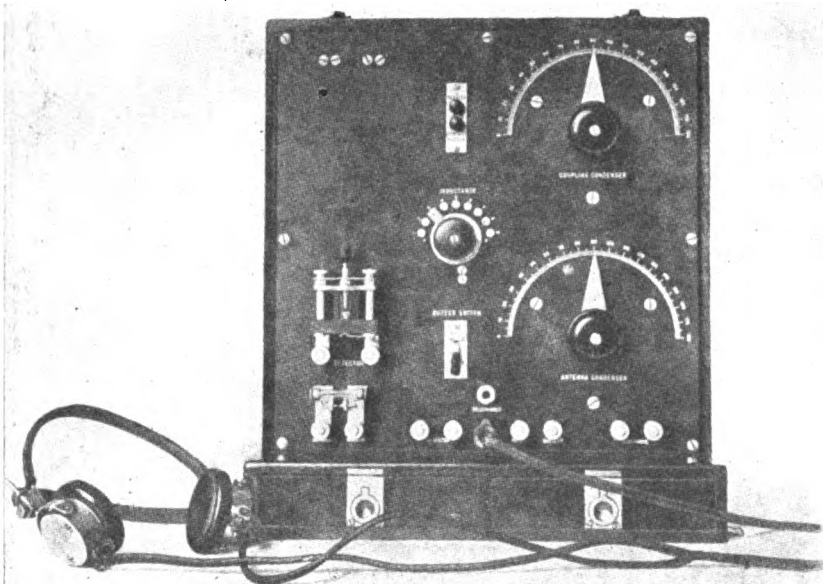
The more efficient receiving sets are equipped with so-called vacuum tube detectors which are similar to small 10-watt incandescent electric lamps enclosing a metal plate and grid in addition to the filament. These devices are unusually sensitive and have the property of acting as amplifiers as well as detectors. Some sets employ more than one vacuum tube, thereby increasing the audibility of incoming signals to an extent often sufficient to be heard throughout a medium-size auditorium or dance hall. Apparatus of this type usually costs from about \$100 or \$200 and when coupled to a horn can be readily employed to entertain a large group of people without making it necessary for each of them to wear a pair of receivers on his ears. In fact, the dance music that is broadcasted may

be utilized in this manner to give dances in the home without the expense of an orchestra. The actual size of a vacuum tube outfit is often no larger in any dimension than an ordinary porcelain lined cigar humidor and is generally furnished in a similar well-polished cabinet that readily harmonizes with the furniture of a living room.

For ranges less than 20 miles it is frequently unnecessary to erect an outdoor aerial (overhead wires), provided a vacuum tube receiver equipped with two or more amplifier tubes is employed. A small wooden frame four or five feet square, the larger the better, wound with about five turns of common bell wire, the turns being spaced a quarter of an inch apart will suffice. The ends of the coil should be connected to the aerial and ground terminals of the receiver apparatus, interposing what is known as a variable con-



This Radio Receiver Set Employs a Vacuum Tube Detector and Is Very Sensitive.



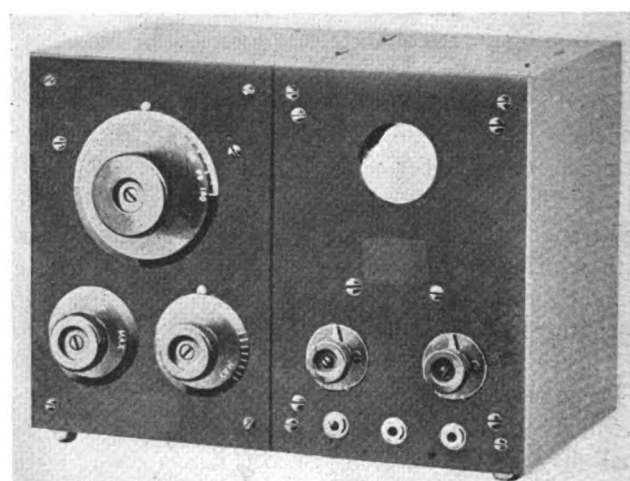
about 100 feet for efficient reception from the majority of radio telephone stations. The actual length of the horizontal portion will depend to considerable extent upon the length of the vertical portion. A good rule to follow, therefore, is to keep the total length of the antenna system, which includes the wire from ground to apparatus and from apparatus to the end of the overhead wire or wires somewhat within 175 feet. The aerial should be well insulated from its supports and at the point of entry into the house. Small porcelain or composition insulators costing a few cents are sold for this purpose. The aerial wire itself need not have an insulating covering, bare wire being most generally used.

One of the Lower Price Outfits that Has What is Known as a "Crystal detector." This is a rather elaborate set, as it has three controls.

denser in the loop circuit. Altho loop aerals of this type can be used for reception over distances greater than 20 miles, the apparatus that must be associated with the loop requires an expert to adjust and hence is not recommended to the novice. Furthermore, the loop must be rotated until its plane is in the same direction as that of the broadcasting station.

For "sure fire" results at least one wire should be strung outside the building at as great a height as possible. This wire should preferably have a horizontal length of not less than 80 feet and be not greater than

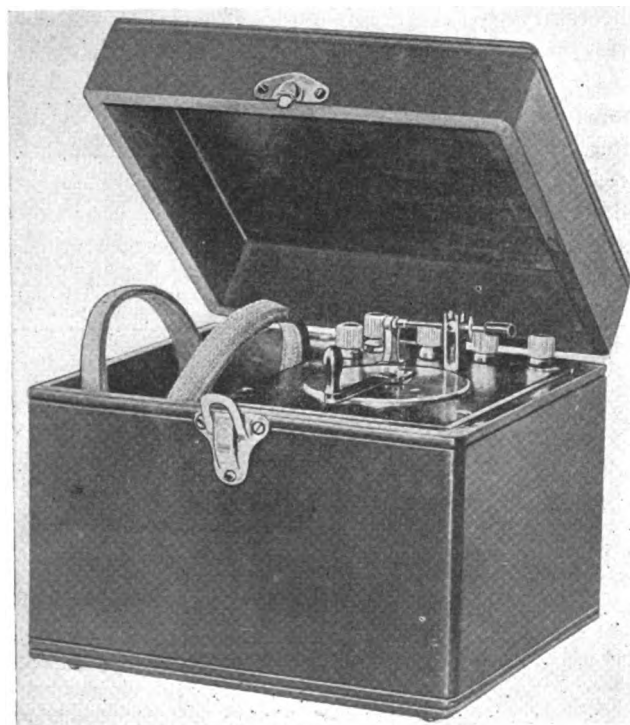
The fundamental principle governing radio communication lies in the fact that whenever an electric current is established in a conductor or circuit, certain phenomena may be found to take place outside of the conductor, as well as inside of it. As is generally known, inside of the



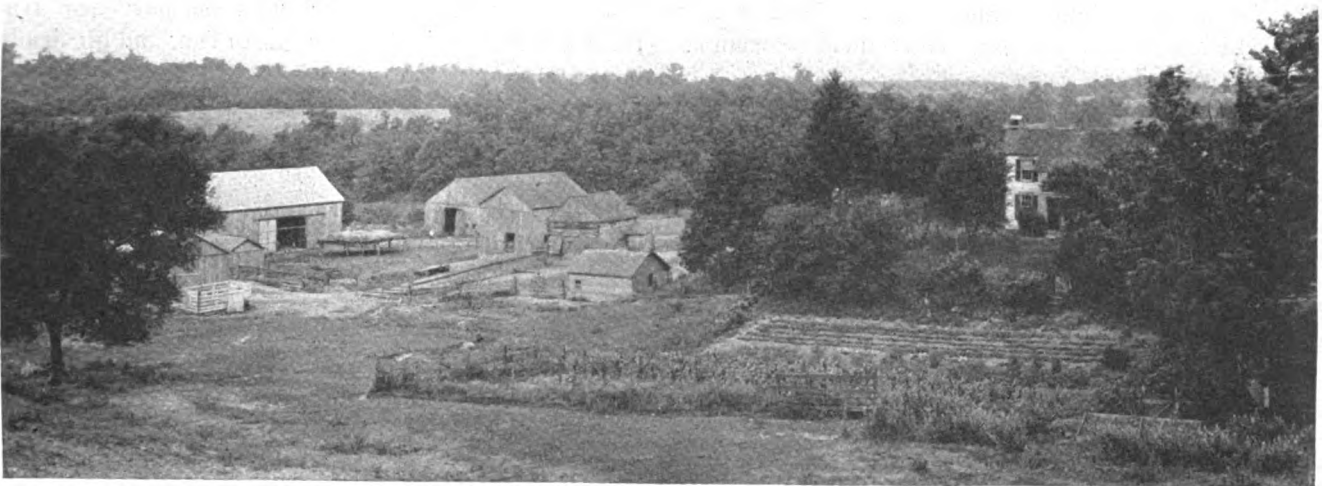
When Three Vacuum Tubes Are Used, as in the Set Shown Above, the Audibility of the Incoming Speech or Music Is Greatly Increased.

conductor energy is consumed by being converted into heat. On the other hand, it is not commonly understood that in the space surrounding the conductor conditions of stress exist which are called the electric field, the two main components being the electro-magnetic and electrostatic components.

In any radio transmitting circuit an alternating current of very high frequency and of great intensity or voltage is established. This insures a high rate of variation of the electromagnetic and electrostatic fields associated with the current. By virtue of the shape of the transmitting circuit these fields extend to great distances, portions of them being linked by the remotely situated receiving circuits. There the energy which is



A Single Control Radio Receiver Employing a Crystal Detector.



"Uncle" George Turner's Farm Group Had Withstood the Wear and Tear of the Elements for Many Years, But the Old Folks Loved the Place and it Was Not Until Little Benny Came to Live with Them That Uncle George Gave Thought to Installing the Modern Improvements.

Benny Wins Over Uncle George

When the Little Boy Comes to Live on the Farm He Also Causes Aunt Sue to Realize Her Greatest Desire

By F. J. ST. JOHN

AUNT SUE TURNER wanted an electric lighting plant and Uncle George wanted to adopt a boy, so they—well, they didn't compromise, exactly, but they adopted a boy, in accordance with Uncle George's desires.

They had been doing things that way all their married life, Aunt Sue reflected, the day the matter was decided, that is, they had been doing, always, the things that Uncle George wanted done, and not the things that Aunt Sue particularly desired.

It wasn't that Uncle George was especially selfish. It was just that he had a way of telling his wants right out, while Aunt Sue was apt to keep silent until she found out what he wanted. Then she would just suppress her own desires if they happened to conflict with Uncle George's. A mighty unfeminine trait, you will say, tho you will find women like that, now and then.

But she did want that electric plant and she had a hard time keeping still about it. She didn't keep still about it entirely, as a

matter of fact. She talked half-heartedly about having electric lights and a motor to do some of the harder chores, but Uncle George didn't understand how she expected to get them and he was all wrought up over the idea of having a little boy on the farm again—and so it was that Benny was duly adopted and, one spring day he came out to them, to become a part of the life on the old farm.

He was a likeable little fellow, was Benny, sturdy and eager to do all that his ten years would warrant his attempting and Aunt Sue quickly took him into her heart, despite the fact that at one time she would rather have had an electric plant.

She did not exactly give up hope of one yet, but waited, as was her manner, until she should find courage to bring up the matter again.

Benny got along famously in his new home—in the daytime. It was Aunt Sue, tho, who discovered that he was a little coward, when night came down. He was afraid of the dark. The nights were so silent, and at the same



Little Benny Was Happy After the Electric Light and Power Plant Was Installed, as He Could Turn a Faucet and Get a Drink Just as He Was Accustomed to do in the City.

time so filled with strange noises, mysterious sounds that send queer thrills up and down his back so that he fled irresistibly to the house and human companionship as the darkness came.

He tried manfully to overcome the impulse, but a something stronger than he seemed to take hold of him and literally fill him with fright. Every night sound was the cry of some beast of prey, to his fear-

everything. I *know* they aint there, but doggone it, I can hear 'em, just the same and I can purt' near feel them a bitin' me. An' I jist got to run, and git in the house, so's they can't git me."

The worst thing was when he had to go down to the barn, after supper and turn the cows out into the night pasture. He thought he just couldn't make himself go down there in the dark, thru the barn, then into the stable, and on to the pasture gate. Aunt Sue decided to speak to Uncle George about it.

"I don't think you ought to make him go down there alone in the dark," she told her husband, "he is frightened most sick, every time when he comes back."

"He'll just have to get used to it," declared Uncle George. "It's only because things are a little strange, but he'll come around all right. Just don't notice it and let him go down there in the dark a few times. We mustn't go to humoring him."

Aunt Sue said no more, but she watched the boy with much mis-giving. He got to moping and drooping around, and he lost much of the cheery, lively air that had made him so lovable when he first came to them.

"Why can't I take a lantern?" he asked Uncle George one particularly dark night, after he had been twice reminded that the cows had not been turned out.

"A lantern! Not much," Uncle George answered decisively. "Lan-

terns are dangerous enough in a big man's hands. You'd likely set the barn on fire."

"Well," declared Benny, "seems to me there ought to be a light of some kind. In the city they have 'lectric lights to light up wherever you want to go and you don't have to feel your way around in the dark. Why don't we have 'lectric lights out here?"

"Oh, we've never felt we needed 'em, I guess," Uncle George answered easily.

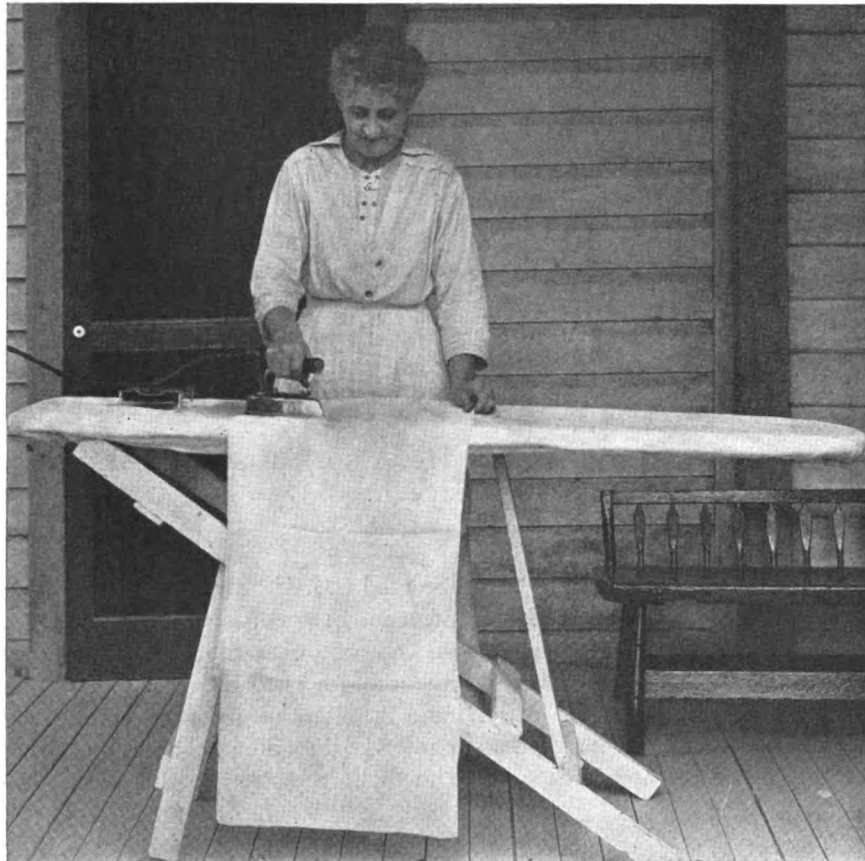
"Don't folks in the country ever have 'lectric lights?" Benny found the subject intensely interesting.

"I s'pose some of them do, that think they have the money to buy electric plants with."

"How much would a 'lectric plant cost?" Benny persisted. "A million dollars?"

"Not a thousand," Aunt Sue spoke up unexpectedly. "We could have a plant put in for a whole lot less than that."

"Mebbe so," Uncle George yielded uninterestedly, "but all this ain't turning the cows out. Benny, they're waiting on you."



The Electric Plant Took Much of the Old Time Discomforts from Aunt Sue's Household Duties—No Hot Stove and Hot Irons on Ironing Day, Just a Turn of an Electric Switch and She Could do the Ironing in Comfort.

haunted imagination, and every trip outdoors of nights brought terror. City bred, he knew and understood the night sounds of the city and in the days before the orphanage took him, he had roamed the streets at night as freely as in the daytime. But the vast arch of star-sprinkled sky, and the night of the country brought a nameless dread, a lonesomeness and a terror which gripped him and held him inescapably.

He tried manfully to keep his secret from Uncle George. He forced himself to accompany the old man about as he did his chores, his little lips puckered with the tune which he whistled up his courage, and Uncle George, lost in his own enjoyment of the little fellow's company, never noticed that he was scared. But Aunt Sue saw it all and the two of them talked it over more than once.

"I know they aint nothin' out there, in the daytime," Benny would declare, "and I try to remember there aint anything there after dark, too. But when I get turned around and started for the house,—whoosh! I can hear 'em coming, wolves and bears and taggers and

Poor Benny started on reluctant little feet down the path to the barn, pausing only to say, "If I had a million dollars now, I'd rather pay 'em for a 'lectric plant than go down there in the dark."

He had barely had time to reach the stable door, it seemed, when they heard his scream of terror. He came crying wildly thru the dark, "Something grabbed me, Aunt Sue. Oh, something did grab me!" He buried his face in her lap and cowered against her, trembling and sobbing.

Uncle George got his lantern and hastened to the barn. Here he found that a restless old cow had wandered into the passageway where the boy had collided with her there in the pitch darkness.

They told Benny what had happened, but the shock had been too great and he could not be quieted.

Tucked in bed, with Aunt Sue holding his hand, he would drop off to sleep, then spring up in terror, living his fright over again.

By morning he had developed quite a fever.

"We must call Doctor Grenfell," decided Aunt Sue, and soon the doctor came. He examined the boy carefully, administered some medicine, then sat quietly until his little patient had dropped off to sleep.

When they were all outside the room, Aunt Sue spoke up with considerable positiveness for her, "I never want that poor little fellow to have to go down there in the dark again. There's got to be a different arrangement when he's up and around again."

"Why don't you get an electric plant?" asked the doctor.

"Just what I had in mind," proclaimed Aunt Sue.

"Spend a lot of money just to humor the boy?" Uncle George spoke a little impatiently.

"No," Aunt Sue spoke more positively than ever now, "spend a little money and get a whole lot of good. Another shock like this one might be mighty serious for our little boy and if we had the barnyard lighted up we would be rid of the chance of that. But that's only a little part of what electricity would do here for us."

"I can't see," the doctor's gray head nodded vigorously, "why folks will overlook electricity, the greatest influence there is on the health of country folks today.

"What is the greatest disaster than can befall any family?" he went on. "Ill health, especially the ill health of the wife and mother. And what are the greatest sources of ill health in the country today? Poor sanitation, the uncleanness and exposure of outdoor closets, poor lights and too much drudgery over chores."

"Electricity," he continued, "is made to order to get rid of all those evils. It will give you running water under pressure. That means a bathroom and indoor toilet, water in the kitchen, water wherever you want it, without any pumping. Electric lights are the safest and best lighting there is. The electric plant you ought to have will give you electric lights just as good as I have in my home in town, and you ought to have them.

You folks deserve just as good lights as anybody else has—and Benny ought to have a light in the barnyard.

"You won't understand," he turned to Uncle George, "how much hard work electricity saves around the place until you've put it to work for yourselves. I can tell you now, tho, if you don't do something like that before long I'll be coming out here to see another patient, another woman worn out from keeping up the hard work too long."

When they were alone Aunt Sue went right to the subject on her mind. "I believe what the doctor said was all true. I've felt that way about it a long time, but I guess it took him to help me say it. Let's don't go any longer without electricity."



Aunt Sue also Employed a Vacuum Cleaner to Take the Dust Out of the Rugs.

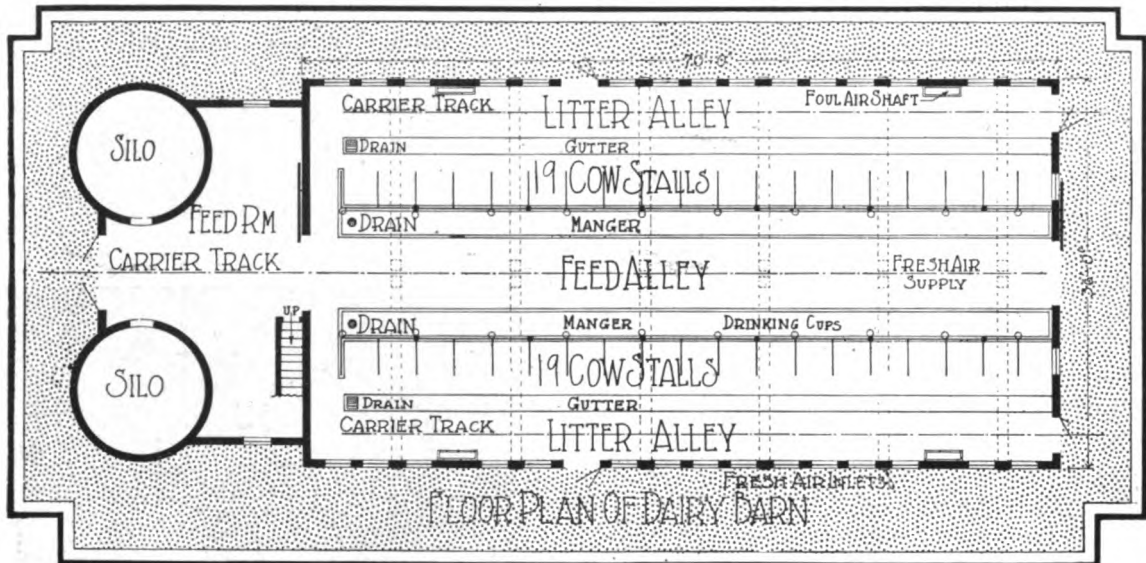
Well, they put in the electric plant and the running water, got all the wiring in and the lights in order by the time Benny was feeling like himself again. He took a tremendous interest in all the improvements, principally in the electric appliances which were put in for Aunt Sue's benefit.

But Benny's big hour came one evening when supper was over and the dark had come. Aunt Sue stood by him while he turned an electric switch by the kitchen door and turned on a light that made the barnyard as light as day. She called Uncle George and together they watched him as he skipped bravely thru the barnyard. Then they saw him stop in the barn door, reach up to another switch and flood that old cow stable with a bright light that banished forever the wolves and the bears and the "taggers," terrors that were never to trouble him again.



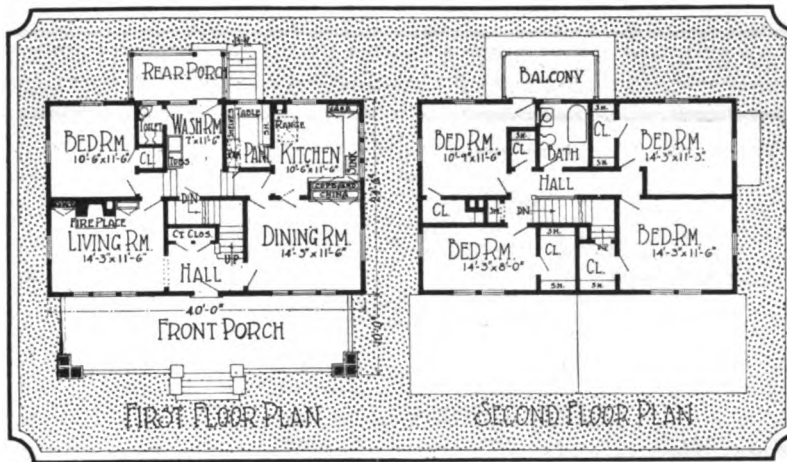
KNOCKING never does anybody any good. This is just as true when the knocking is in the gas engine.

FARM MECHANICS BUILDING DESIGNS



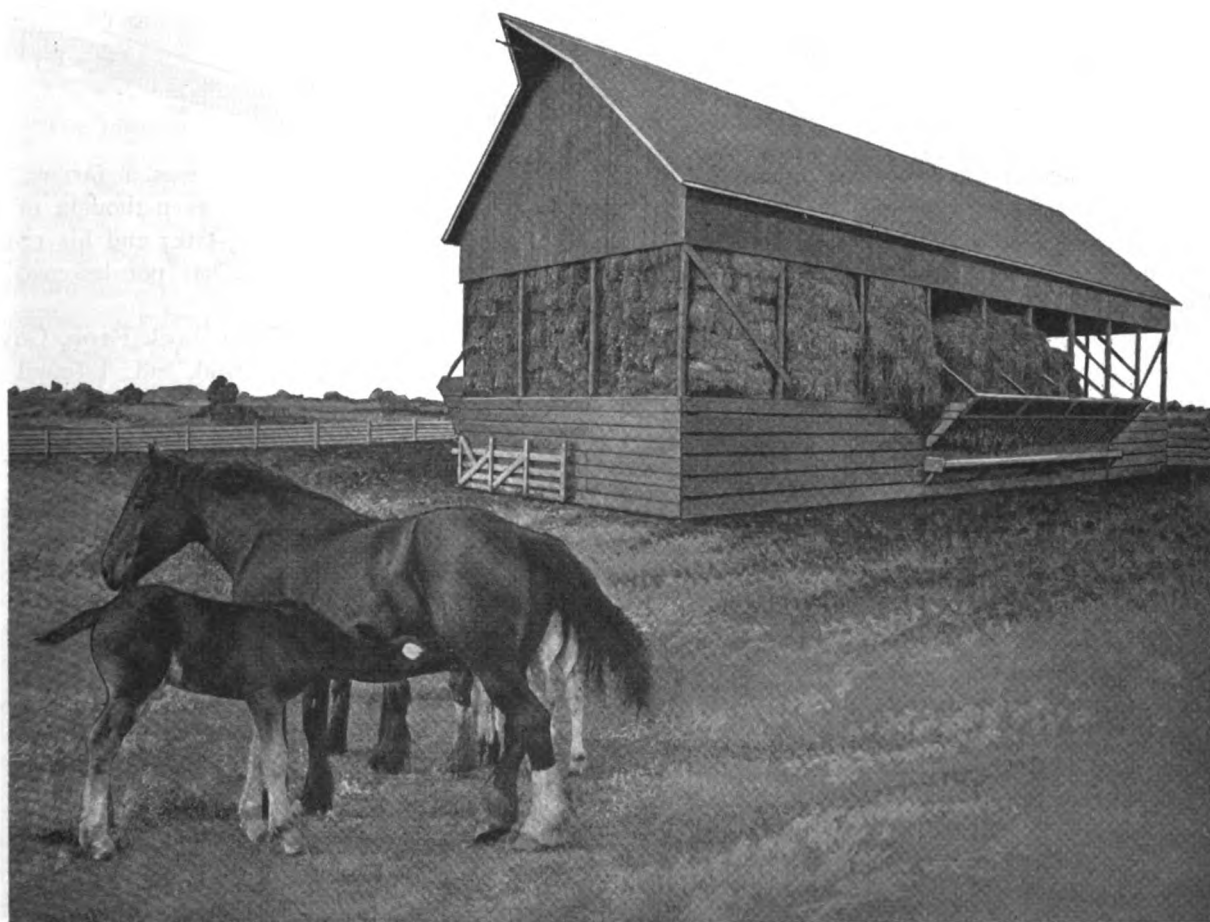
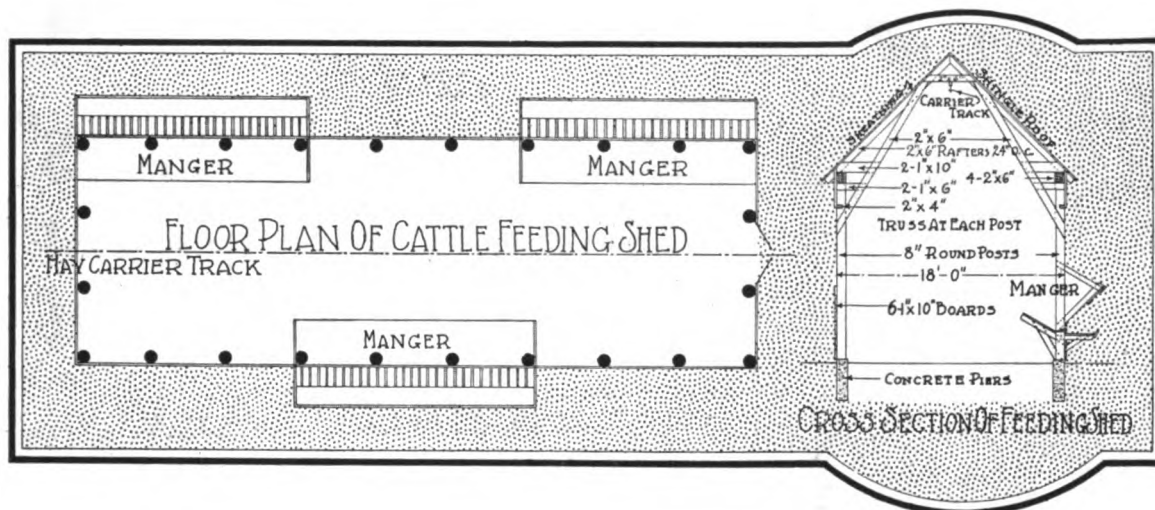
GOTHIC ROOF DAIRY BARN. This design for a good-sized dairy barn is unusually attractive. The Gothic roof with the dormer windows and the battens that form panels on the walls combine to give this barn its handsome exterior appearance. This barn is of frame, 70 feet long and 36 feet wide, a size sufficient for two rows of 19 cow stalls. The two hollow tile silos, with the feed room between, furnish storage space for grain and ensilage, while the mow room holds the roughage. Modern equipment is specified on the floor plan, including steel stall partitions, individual drinking cups, suction ventilation and an overhead carrier track.

PLAN OF EIGHT ROOM MODERN FARM HOME



EIGHT ROOM MODERN FARM HOME. By the addition of a broad porch, with concrete piers and steps, this ordinary two-gable house has been made most attractive. The house proper is a rectangular building 40 feet wide and 24 feet 6 inches deep. The porch is 10 feet deep and almost as wide as the house. Eight rooms, four on each floor and a bathroom on the second floor and good-sized washroom on the first floor are shown on the plans. Every room in the house, both upstairs and down, is on a corner, making them sunny and cheerful and they are connected so that the housework can be done with an economy of labor.

FARM MECHANICS BUILDING DESIGNS



HAY STORAGE AND PASTURE LOT FEED BARN. This type of building is not often found on the farm but it is an efficient hay storage barn. The advantages of this building are that it keeps the hay, either baled or loose, protected from the weather and at the point where it is to be fed. The building is of simple frame construction, 8-inch round posts being set on concrete piers, and the roof supported by trusses at each post. The building is left partially open, so that the hay will be well cured and will keep from heating. The building is 18 feet wide and 54 feet long.



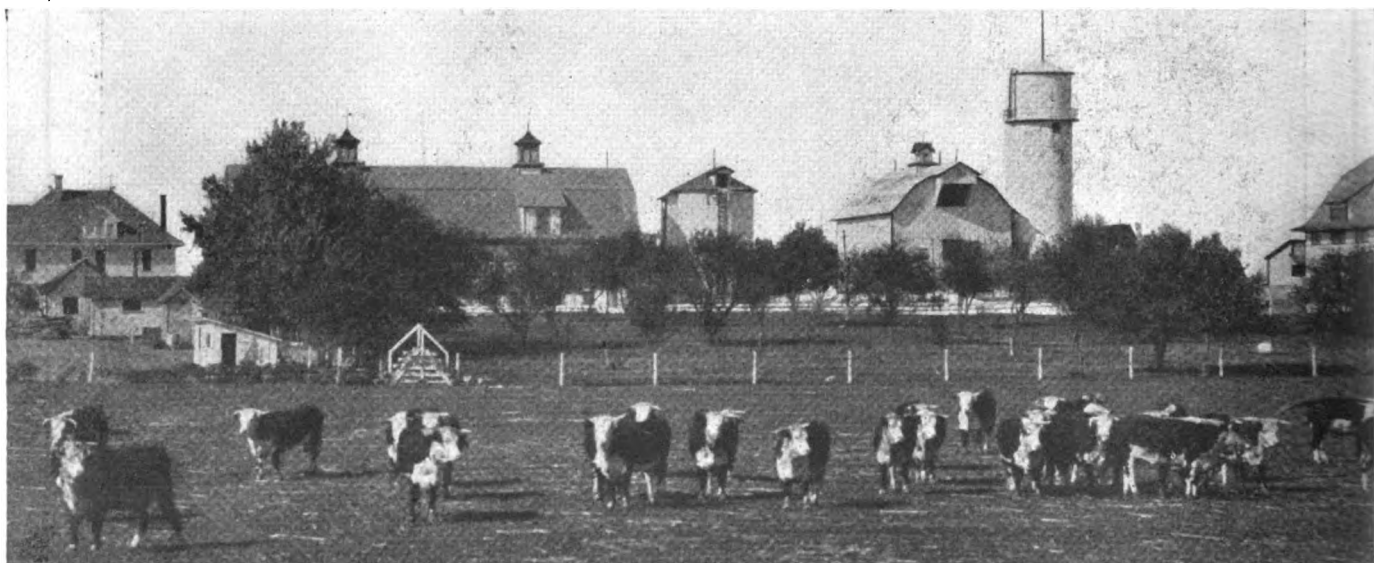
WARREN T. McCRAY
and His
"PERFECTION FAIRFAXES"
The Heart of the Hereford
Industry is found at
ORCHARD LAKE
STOCK FARM
By "The Judge"

SOME time ago an advisory committee of the War Finance Corp. was named, composed of business men and of bankers in the cornbelt states to aid the Federal government to solve the difficulties of the grain and livestock growers of the Middle West. Governor Warren T. McCray, of Indiana, was chosen chairman of this committee.

Governor McCray's interest in the welfare of

farmers is very natural, for he was a farmer and livestock breeder long before he even thought of becoming governor of his native state; and his rise in the political affairs of Indiana has not lessened his interest one whit.

When I visited Orchard Lake Stock Farm, Governor McCray's place near Kentland, Ind., I found the explanation of this man's whole-hearted support of



Panoramic View of the Buildings at Orchard Lake Stock Farm with Some of the Pure-Bred Herefords in the Foreground.

ORCHARD LAKE STOCK FARM

NOTABLE FARMS IN PICTURE & STORY

the farmers. Governor McCray is a farmer and live-stock breeder first, and a politician second. Orchard Lake Stock Farm is a farm that has been brought up to a high state of productivity; it supports a herd of more than 600 of as fine Hereford cattle as can be found in the country, and was the home for many years of "Perfection Fairfax," the "King of Hereford Sires."

"Perfection Fairfax" died Sept. 26, 1920, at the age of 17 years, altho, as Governor McCray expressed it: "The Old King is dead, but the blood of this illustrious sire will carry on and on."



Warren T. McCray, Owner of Orchard Lake Stock Farm and the Present Governor of Indiana.



"The Judge"

At Orchard Lake Stock Farm they have erected a monument to this famous bull, the monument that is shown in the picture, but "Perfection Fairfax" left numerous sons and daughters, many of which are now at Orchard Lake, while hundreds of others and their progeny will be found scattered thru the notable herds of Herefords of this and other countries.

Truly, the "Heart of the Hereford Industry" will be found at Orchard Lake Stock Farm. This is recognized by all breeders who are familiar with Hereford history. It is to this Indiana farm that the prominent Hereford breeders make frequent pilgrimages to inspect a herd of more than 600 "white faces" that represent the great individuals of this great breed

of beef cattle. With a breeding herd of this size, Orchard Lake has a continuous supply of young animals for sale, and they go to every section of North America, to South America and to Australia. The private sales coupled with the annual dispersal sale have had a great effect on the Hereford industry, for there are few notable herds in the country that have not an admixture of "Perfection Fairfax" blood. And the owners are not backward about letting that fact be known, as a glance at the announcements of the



At the Extreme Left Is the Residence of James Hendry, Manager of Orchard Lake, and at the Extreme Right Is the Sales Pavillion, With Barns and Silos in Between.

ORCHARD LAKE STOCK FARM



The Herefords at Orchard Lake Stock Farm Attract Notable Breeders from all Parts of the World. This picture taken recently shows (left to right) L. O. Clifford, President of the Canadian Hereford Cattle Breeders' Association; W. G. C. Britten, Secretary of the British Cattle Breeders' Association; R. J. Kinzer, Secretary of the American Hereford Cattle Breeders' Association; W. L. Yost, President of the American Hereford Cattle Breeders' Association, and Governor McCray, and three of the fine Herefords at Orchard Lake.

breeders will attest.

Before I tell you more about Orchard Lake Stock Farm as it is today, I want to give you some of the outstanding details of the life of this great breeder of Herefords.

Governor McCray was born and has lived all of his

life in Kentland, Ind. His father was a banker, and after the younger McCray left school he worked for a while with his parent. At that time, however, banking did not appeal to the youth, and he and a school chum entered the grocery business, which like all of his business ventures was a success. One of his early purchases was a tract of 500 or 600 acres of marshy land, which at that time was worth little. But it turned out to be a buy that in the future was to make Governor McCray a leader in the Hereford business. His first venture was with feeders, but after five years he gave it up. During those five years Governor McCray learned something about Herefords, and that was, that they invariably did better than the other animals in his feed lot.

This fact determined McCray to get into the Hereford business. and in 1904 he started, his first purchase being five cows. The following year he added seven cows and a bull, and the next year



Manager James Hendry, of Orchard Lake Stock Farm, and W. E. Towers, Business Secretary to Governor McCray, Have Frequent Conferences Regarding the Operation of the Big Stock Farm. Manager Hendry is at the left of the picture and Secretary Towers at the right.

NOTABLE FARMS IN PICTURE & STORY

18 more cows. In all of these purchases Governor McCray showed a judgment that has been the wonder of the oldtimers in the pure-bred cattle business. The animals he picked up at these sales turned out to be great individuals, and sustained his judgment wherever they were exhibited.

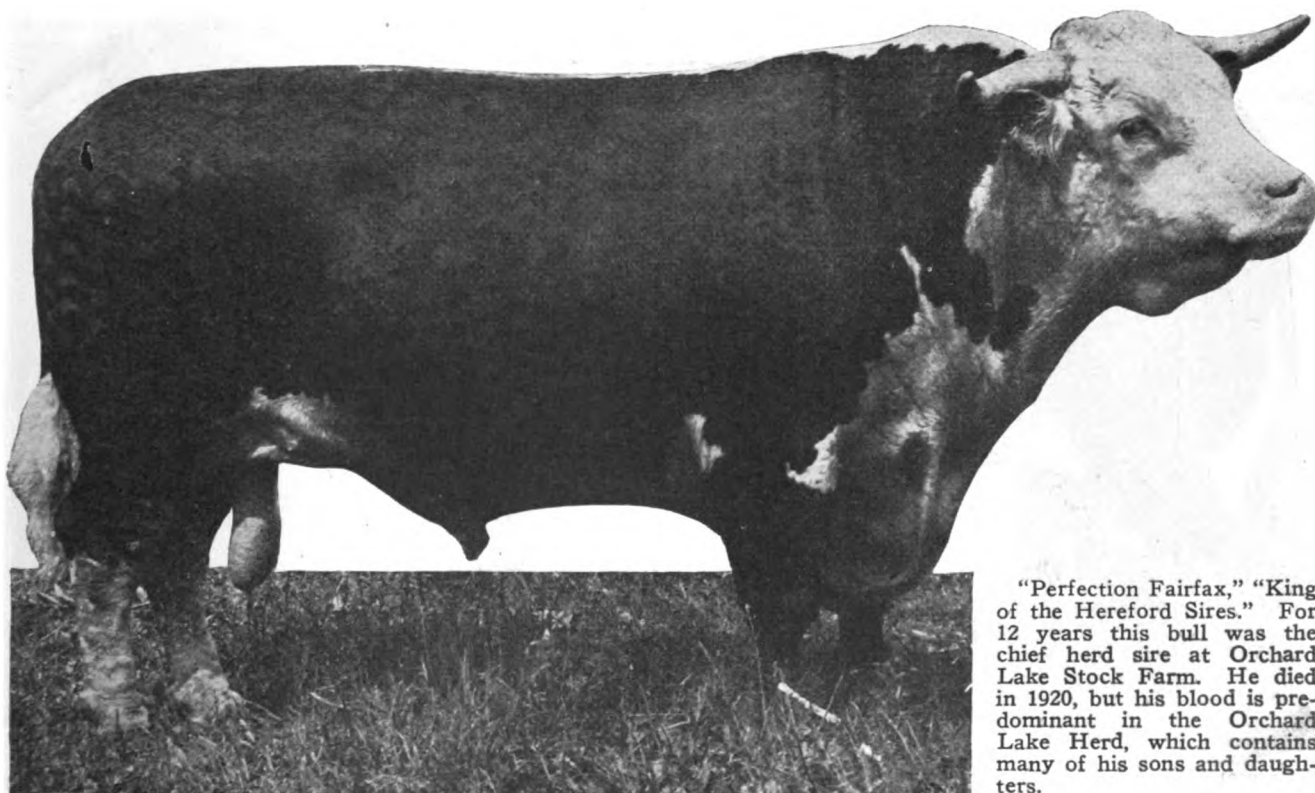
Year by year the Orchard Lake Stock Farm herd was built up. But the really great move that its owner made was when he bought A. C. Huxley's entire herd to secure "Perfection Fairfax," then five years old. The history of this great sire is one of continuous successes. Year after year his get carried off blue ribbons at the state fairs and International shows. His sons and daughters have been distributed to all parts of the world, and have brought great fame and prosperity to Orchard Lake Stock Farm and its owner.

As Governor McCray added to his herd he improved his farm. Of course, with an increase in the number of animals on the farm, buildings were needed. Also more land for grass and grain crops was required.

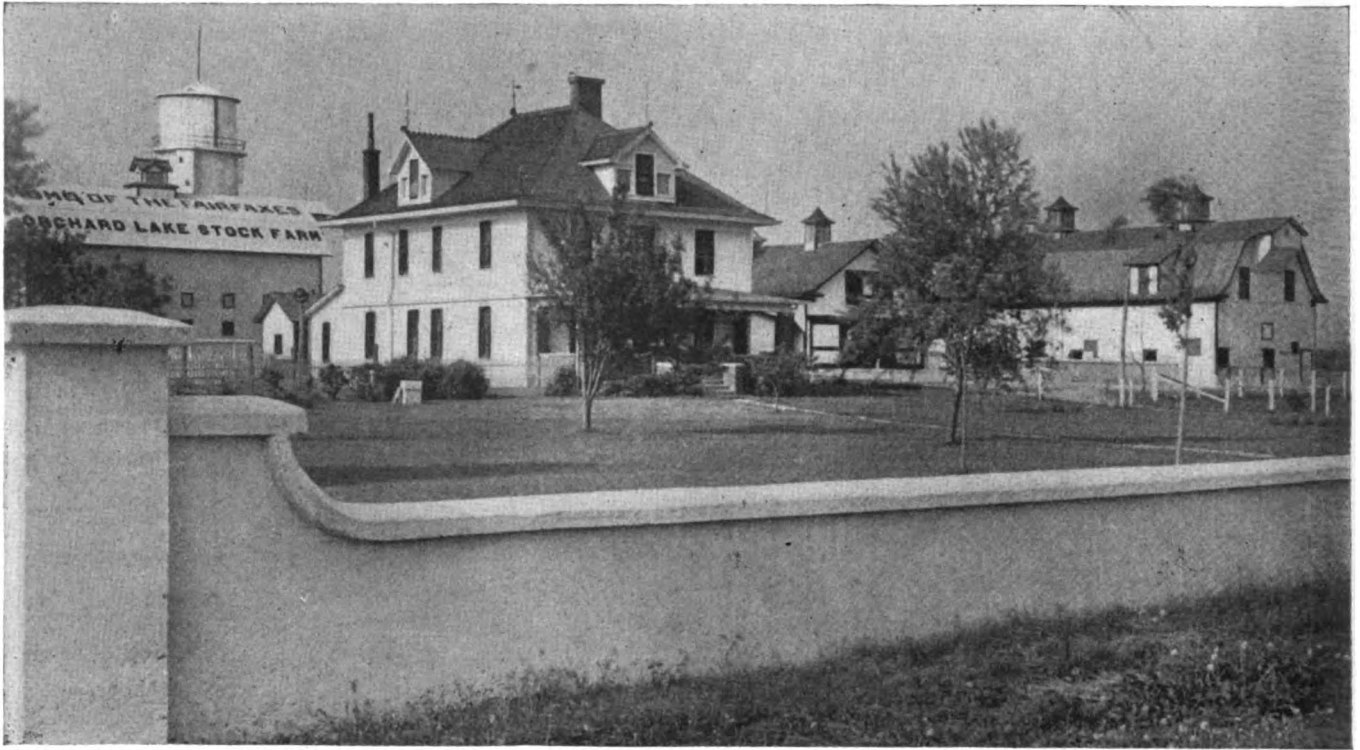
Orchard Lake Stock Farm now contains 2,000 acres of well drained and fertile land. There are eleven complete sets of buildings on the place. Thirty persons are employed there, and the buildings and animals are



Governor McCray Has Paid Fitting Tribute to "Perfection Fairfax," "King of the Hereford Sires," by this Monument, Which Was Erected Shortly After the Old King's Death at Orchard Lake, in September, 1920.



"Perfection Fairfax," "King of the Hereford Sires." For 12 years this bull was the chief herd sire at Orchard Lake Stock Farm. He died in 1920, but his blood is predominant in the Orchard Lake Herd, which contains many of his sons and daughters.



Orchard Lake Stock Farm, Near Kentland, Ind. This is the view of the buildings at the farm that first greets nothing fancy about them, but they are practical buildings designed to house this herd of more than 500 Herefords,

protected by insurance totaling something more than three-quarters of a million dollars. These figures do not seem so large when it is remembered that in one year Orchard Lake Stock Farm sold \$565,000 worth of Hereford cattle.

When I drove up to Orchard Lake Stock Farm from Kentland, which is about five miles away, I was impressed with the spic-and-spanness of the place. Along the road in front of the group of farm buildings there is a neat concrete wall which, followed,



"Brummel Fairfax," Chief Herd Sire at Orchard Lake Stock Farm Since the Death of "Perfection" Fairfax," His Sire. "Brummel Fairfax" was shown at 10 shows in 1919, winning six first and grand championships and four seconds.



the visitors. All of the buildings, residences, barns and sale pavilion are of substantial frame construction. There is which contain some of the great Hereford blood lines, notably that of "Perfection Fairfax."

leads the visitor to the main entrance. On the posts at either side of this entrance is the monogram of the owner, while along the sides of the monitors of the barns is displayed in large letters, "Orchard Lake Stock Farm Herefords." Inside this wall, however, there is nothing of the show place about the farm.

The buildings themselves are just good, practical, well-constructed farm buildings. They are designed to house the herd in winter and to keep the animals rugged and healthy. Barns and sheds are weather-tight, but they are so constructed that the animals get plenty of fresh air and have ready access to the



Here is the Aged Hereford Herd Sent to the Shows in 1920 by Orchard Lake Stock Farm and Was Undeafated. At the extreme right is "Brummel Fairfax," while the others from left to right are "Doe Fairfax," "Orphan Fairfax," "Lady Donald," and "Lena Fairfax."



Some of the Orchard Lake Stock Farm Herefords in Blue Grass Pasture.

yards. In the buildings is plenty of mow space for roughage and storage space for grain and mixed feed, while silos hold the thousands of tons of ensilage produced on the farm.

One-fourth of the farm acreage is devoted to

pasture; another 500 acres produce the corn and ensilage used on the farm; 200 acres are in wheat, 500 acres in oats and 200 acres in hay. The other hundred acres are covered with buildings and barn yards.

The crop rotation is corn one year, oats one year, wheat one year and clover. The fields are systematically fertilized, lime and rock phosphate being used to supplement the applications of manure.



One of the Big Barns at Orchard Lake.

Since 1909, Orchard Lake Stock Farm has been under the management of James Hendry, known to his hundreds of friends among breeders and visitors to the shows as "Jim." "Jim" is a Scotchman who has been in this country for 30 or more years, and has always been identified with Herefords. True to his race he loves cattle



A Woodland Pasture Scene at Orchard Lake Stock Farm.



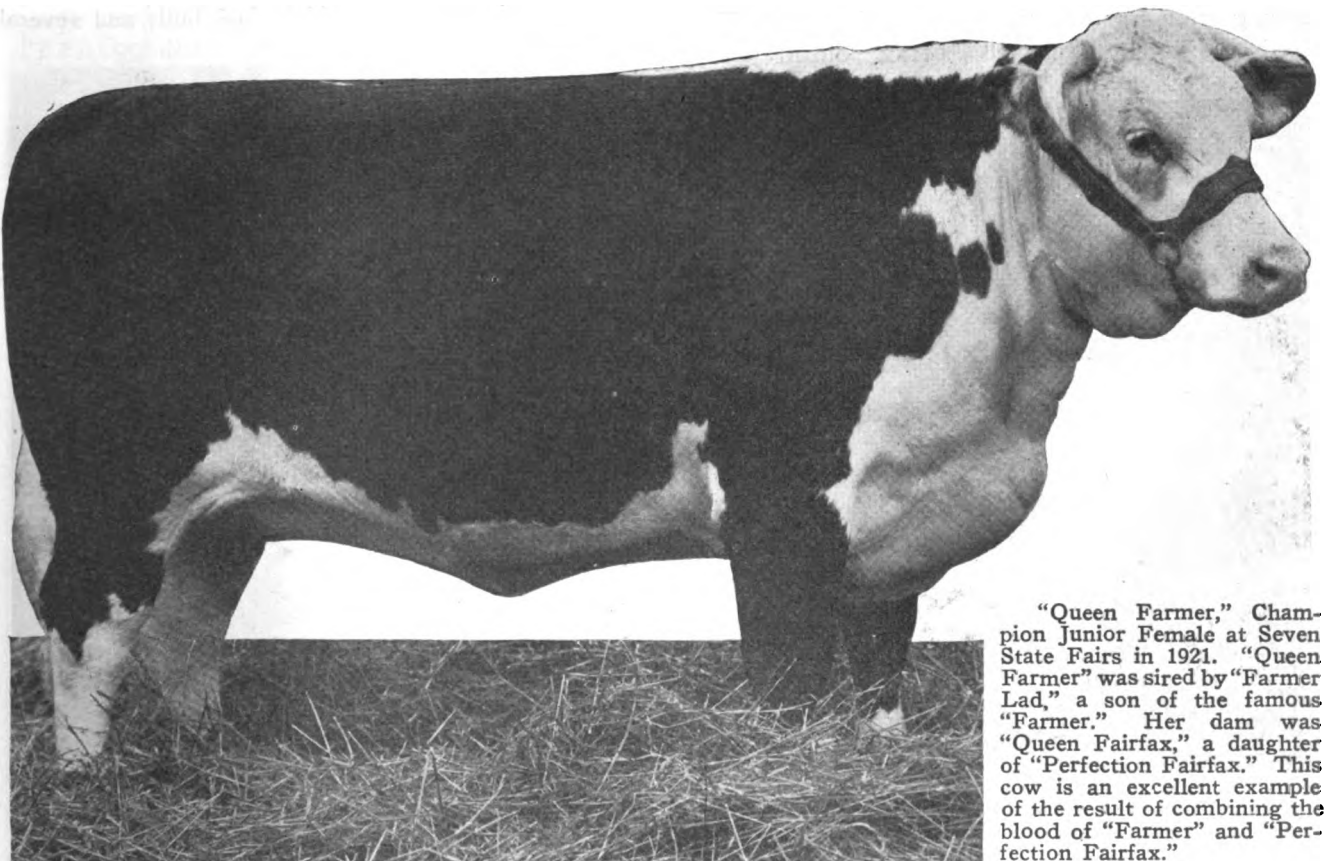
Blue Ribbon Get of "Perfection Fairfax" Herefords at Illinois and Ohio, 1921.

and knows them. But withal his ability and fame as a breeder, he is a quiet, unassuming man, and is proud of the animals in his charge. He usually is found at the shows, hovering near the Orchard Lake Stock Farm show herd, and it is due to his ability as a farm manager as well as to Governor McCray's judgment of cattle that the great fame has come to this Indiana breeding establishment.

I was not long at Orchard Lake Stock Farm before I, like every other man who knows him, began calling Mr. Hendry "Jim."

"Jim," I said, "tell me something of the history of 'Perfection Fairfax'."

And Jim did, altho I could see that his sentiments were aroused and he spoke as if he were talking of a friend who had gone.



"Queen Farmer," Champion Junior Female at Seven State Fairs in 1921. "Queen Farmer" was sired by "Farmer Lad," a son of the famous "Farmer." Her dam was "Queen Fairfax," a daughter of "Perfection Fairfax." This cow is an excellent example of the result of combining the blood of "Farmer" and "Perfection Fairfax."



One of the Big Barns at Orchard Lake Stock Farm that Houses the Hereford Herd.

"Judge," he said to me, "*There* was one of the greatest of all sires of this great breed of cattle."

I will not attempt to quote Mr. Hendry, but will give in brief when he told me about the breeding of "Perfection Fairfax" and the other Hereford sires at Orchard Lake.

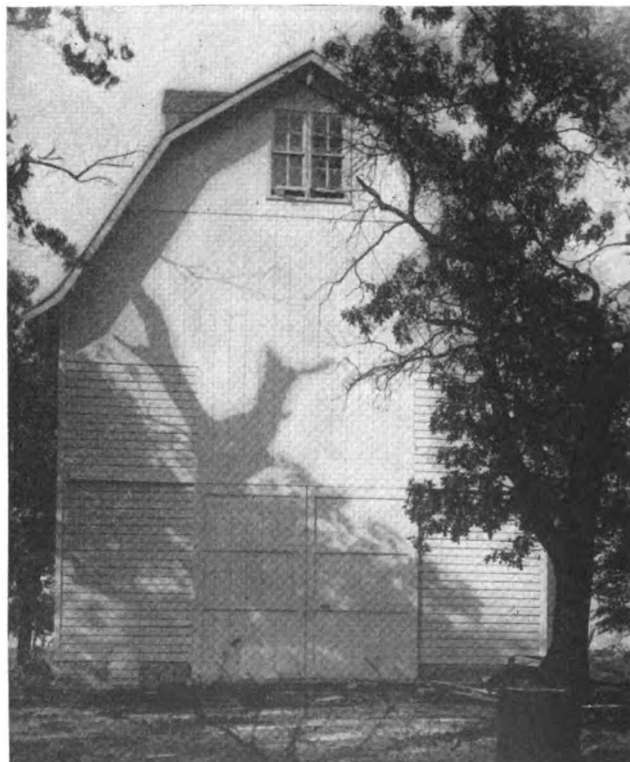
"Perfection Fairfax," the "King of Hereford Sires," was calved Oct. 10, 1903. His sire was "Perfection," himself a famous bull, and his dam was "Imported Berna," a daughter of "Fairfax," who sprung from some of the greatest of English Herefords. His son, "Brummell Fairfax," out of "Lena,"

a famous matron, now heads the herd at Orchard Lake. Other great "Perfection Fairfax" sires at the farm are "Romeo Fairfax," "King Fairfax," "Sir Horace Fairfax," "Duncan Fairfax," "Leonard Fairfax," "Marcus Fairfax" and "Lincoln Fairfax." Besides, for cross-breeding, there is "Farmer," an imported bull by "Eaton Pearl" out of "Fidget," and "Real Beau Donald" by "Beau Real" out of "Flossie Donald."

With such an array of high-class bulls and several



Water Towers Are Placed at the Top of the Concrete Silos at Orchard Lake and Supply Water to the Barns and Pastures.

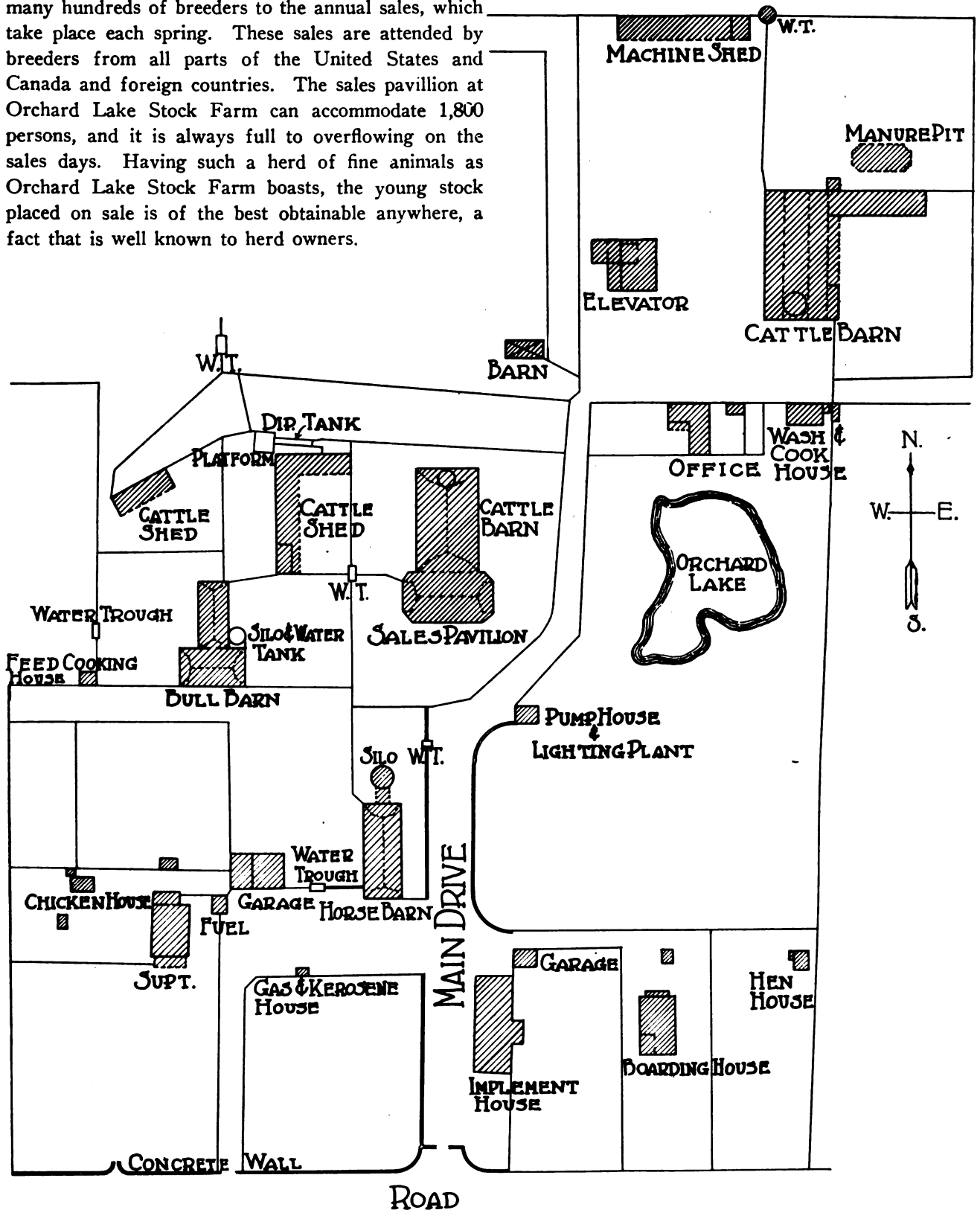


End View of New Corn Crib at Orchard Lake Stock Farm.

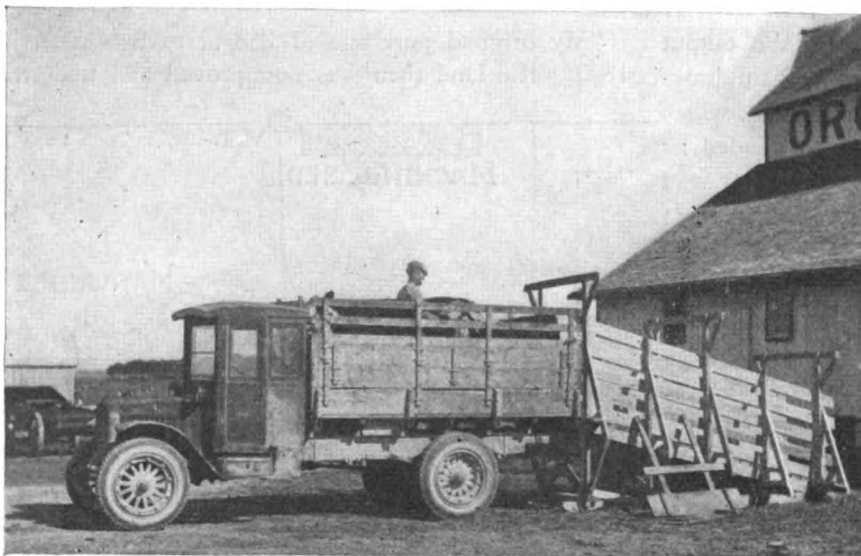
NOTABLE FARMS IN PICTURE & STORY

hundred matrons of great individuality, the output of young stock at the Orchard Lake Stock Farm draws many hundreds of breeders to the annual sales, which take place each spring. These sales are attended by breeders from all parts of the United States and Canada and foreign countries. The sales pavilion at Orchard Lake Stock Farm can accommodate 1,800 persons, and it is always full to overflowing on the sales days. Having such a herd of fine animals as Orchard Lake Stock Farm boasts, the young stock placed on sale is of the best obtainable anywhere, a fact that is well known to herd owners.

"My original purchase of 258 acres was made in 1890. The land then was unimproved and undesira-



Drawing Showing the Layout of Buildings at Orchard Lake Stock Farm.



Loading Stock for Shipment at Orchard Lake Stock Farm. The farm uses Republic motor trucks for hauling the animals to the railroad.

ble," said Governor McCray to me, in discussing the growth of Orchard Lake Stock Farm. "The vision of the future possibilities of such a property prompted the investment of large sums for its drainage and improvement. From time to time, as opportunity offered, additional purchases were made until now the farm comprises a tract of 2,000 acres. This has been highly developed and improved with the aim of making it one of the most complete and practical breeding establishments in America.

"At first I started feeding steers and raising grade calves for baby beef. I was always partial to the Hereford breed, and from feeding steers and raising grade calves to the breeding of pure-bred cattle was but a short step. In 1904 I purchased a few registered cows, adding in 1905 the first bull to the herd.

"From this small and modest beginning the business has grown until the herd at all times numbers more than 600 head. The success of the enterprise can fairly be attributed to the ambition to produce the best cattle possible; the fortunate selection of sires; the application of sound business principles; the use of good judgment; the

loyalty and faithfulness of the management organization, supported at all times by the policy of fair and upright dealing under all circumstances and conditions.

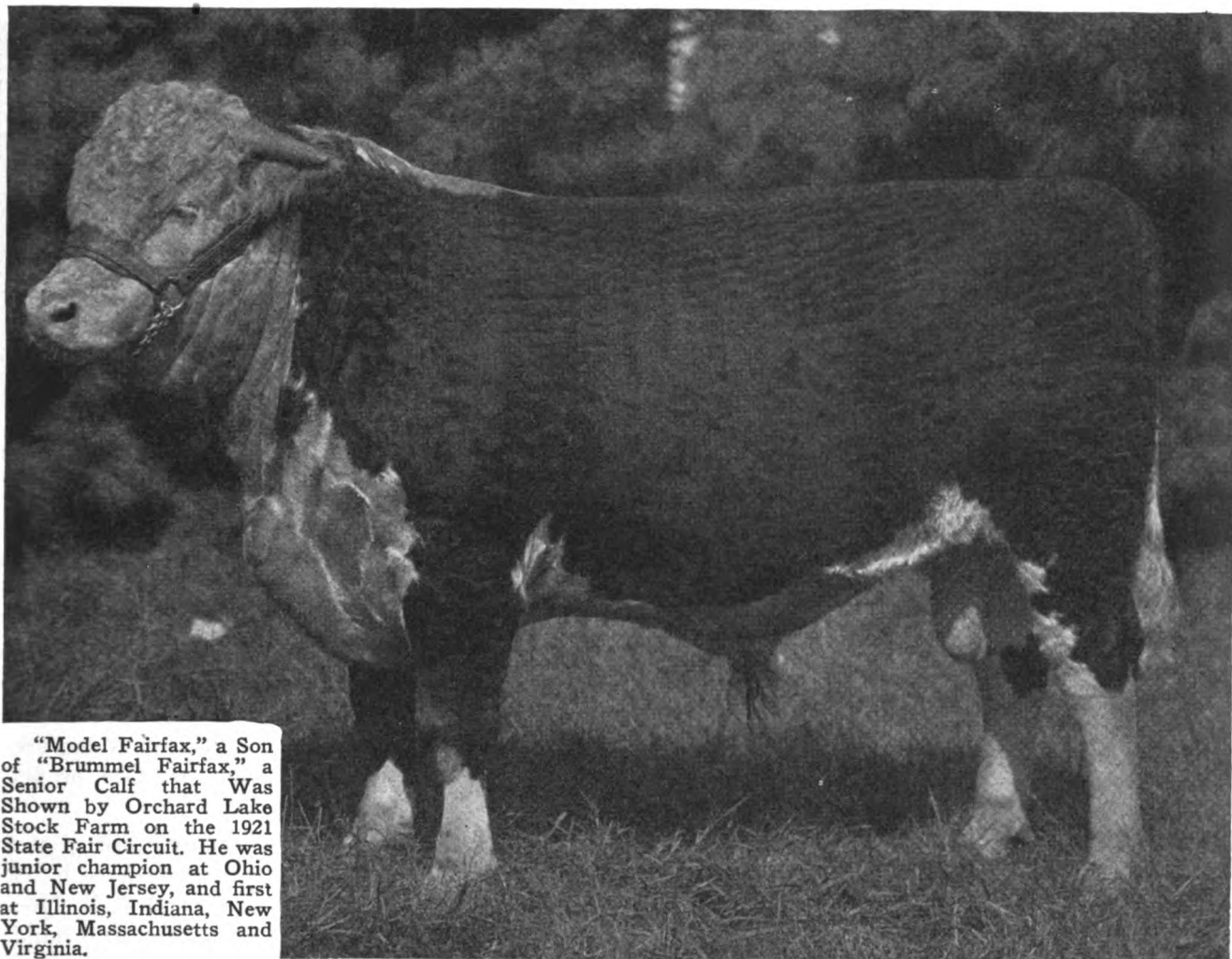
"In all probability there was never such universal praise for the production of any animals as there has been for the sons and daughters of "Perfection Fairfax." The record of this world famous sire as a show bull and producer of show animals is without parallel in the history of the animal industry.

"The familiar commendation for the man who

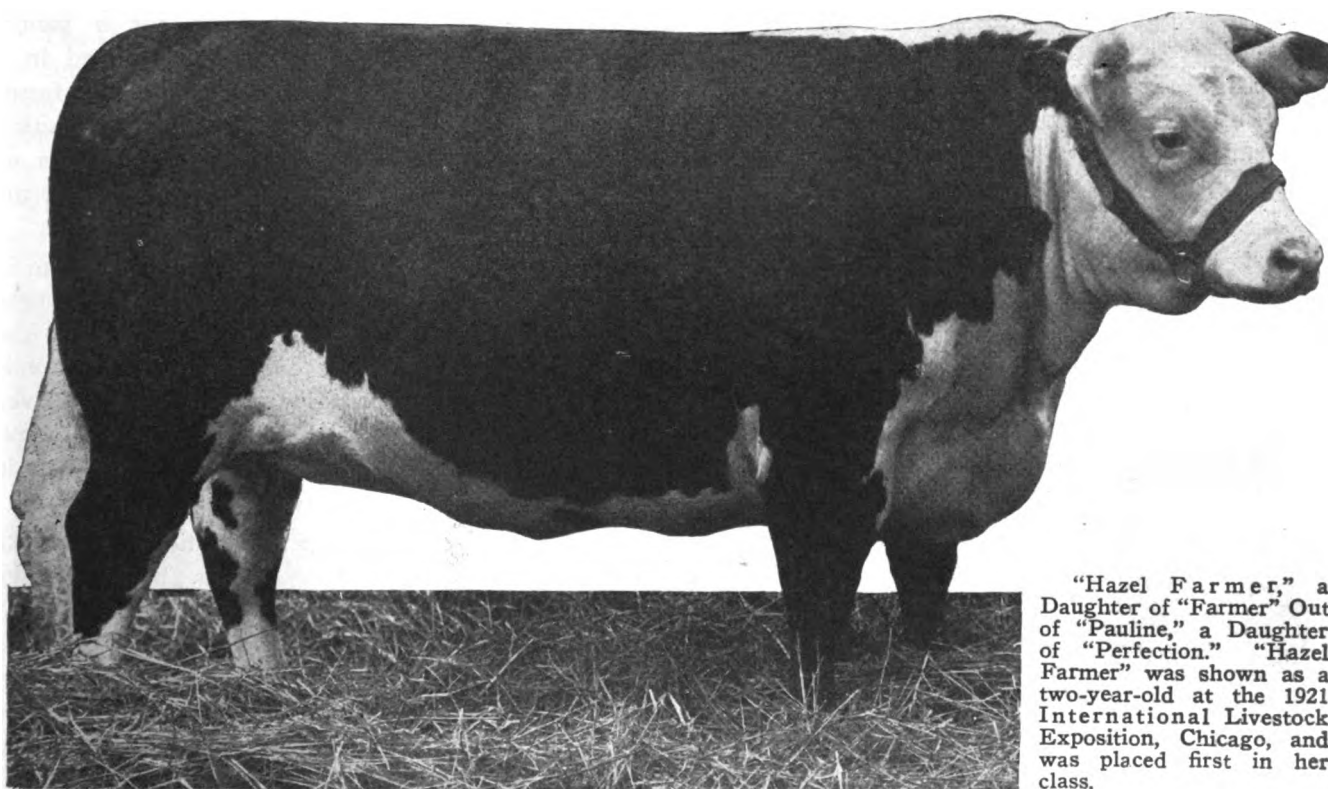


The Huge Sale Pavilion at Orchard Lake Stock Farm Where the Annual Sales Are Held. Two years ago more than \$600,000 was paid for Orchard Lake Herefords at public and private sale.

NOTABLE FARMS IN PICTURE & STORY



"Model Fairfax," a Son of "Brummel Fairfax," a Senior Calf that Was Shown by Orchard Lake Stock Farm on the 1921 State Fair Circuit. He was junior champion at Ohio and New Jersey, and first at Illinois, Indiana, New York, Massachusetts and Virginia.



"Hazel Farmer," a Daughter of "Farmer" Out of "Pauline," a Daughter of "Perfection." "Hazel Farmer" was shown as a two-year-old at the 1921 International Livestock Exposition, Chicago, and was placed first in her class.

ORCHARD LAKE STOCK FARM

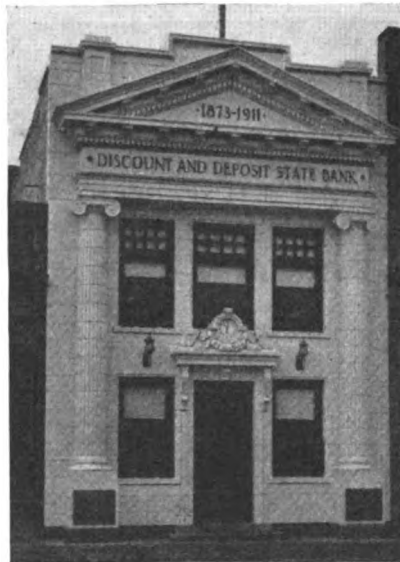
NOTABLE FARMS IN PICTURE & STORY



"Orphan Fairfax" and "Cynthia Fairfax," Two of the High-Class Females at Orchard Lake Stock Farm that Carry the "Perfection Fairfax" Blood.

causes two blades of grass to grow where but one grew before, is hardly to be compared to the work of those who are improving a whole breed of cattle, developing it to the highest standard of quality and usefulness. I am indeed glad that I have had a part in this important work and I look upon the development of Orchard Lake Stock Farm, with its famous herd of Herefords, as the greatest achievement of my life."

That last sentence sounds pretty strong, coming from a man who has been elected governor of his native state. Yet it rings true when all that Governor McCray has accomplished with pure-bred cattle is remembered. From a small beginning Governor McCray has built



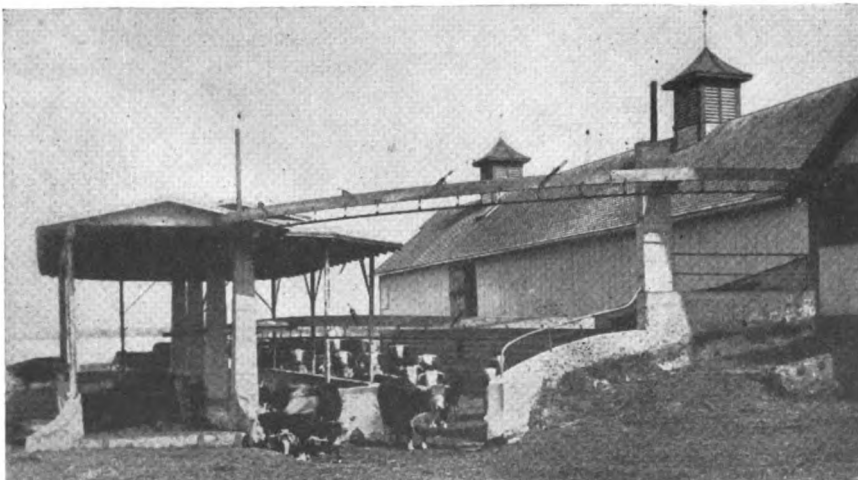
Besides Owning Orchard Lake Stock Farm, Governor McCray Is the President of the Discount and Deposit State Bank at Kentland, Ind.

up one of the notably great herds of Herefords in this or any other country; he has used modern methods to bring an unpromising piece of land up to high crop production, and has made it possible for breeders to improve their herds by the addition of sires and breeding cows that produce profitable offspring.

The community spirit is strong around Kentland, fostered by Governor McCray, and it is not uncommon for a dozen or a hundred residents of that section to gather at Orchard Lake for a picnic. These activities are centered in a log cabin on the McCray farm, which is used as summer outing headquarters for the employes of the farm, their families and for the other visitors to the place.

As evidence of the high esteem in which Warren T. McCray is held in his home town and county in the primaries for gubernatorial nomination Governor McCray received 280 of the 308 votes cast in Kentland, and 1,022 of the 1,227 cast in the county.

Among the positions with which McCray's friends have honored him are: Public school trustee, public library trustee, chairman of the county council of defense, chairman of all war activities in Newton County, district director of the War



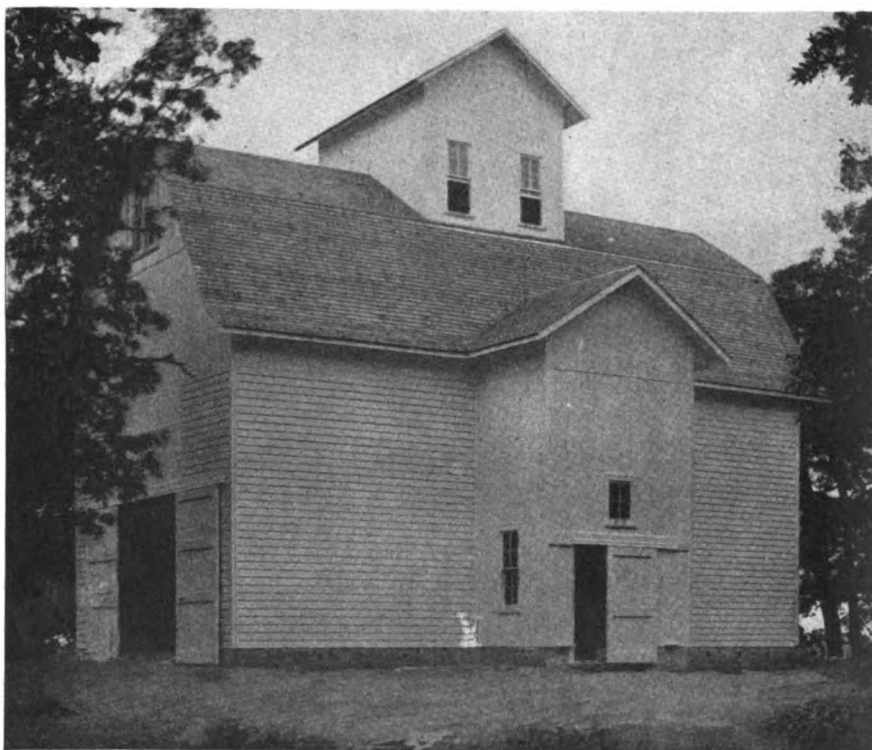
An Overhead Carrier System Connects the Manure Pit With the Cattle Barn at Orchard Lake.

NOTABLE FARMS IN PICTURE & STORY

Savings Stamp Committee, member of the county board of children's guardians, trustee of Purdue University, trustee of the Northern Hospital for the Insane, member of the state board of agriculture, president of the Indiana Livestock Breeders' Association, president of the Indiana Hereford Breeders' Association, president of the National Grain Dealers' Association, president of the American Hereford Cattle Breeders' Association, chairman of the arbitration committee of the National Grain Dealers' Association, chairman of the Indiana production and food conservation committee, member of the U. S. conference for livestock production, member of the National committee of five on production and regulation of meat supply.

In 1918 McCray organized the Newton County Hereford Calf Club with 35 members. This organization is still pursuing a successful career. McCray donated a \$300 calf as first prize to the club in order to start it off right and was instrumental in providing trips to the International and other lesser prizes to the members. His hand is everywhere and in everything that works for the good of his community.

The Discount and Deposit State Bank of Kentland, which is now owned by McCray with the exception of a few small blocks of stock which are widely scattered, is an institution which was nursed along by the McCray and Ade families from the time it was a little private institution run in connection with a small general store until it became, as it is now,



The New Corncrib and Granary at One of the Outlying Farms of Orchard Lake Stock Farm. This modern building houses the corn and grain grown on the farm.

one of the best known financial institutions in Northwestern Indiana. The senior McCray and the senior Ade were partners for 37 years and Warren T. married the youngest child of the Ade family.

Orchard Lake Stock Farm is indeed one of the notable farms of America, and the Judge is proud to offer it as pre-eminently qualified to represent in this series of articles the best in the pure bred beef cattle industry in America.

EDITOR'S NOTE: *This is the eighth of our series of "Notable Farms in Picture and Story." The ninth will appear in an early issue.*



The Men's Boarding House at Orchard Lake Stock Farm



Residence of Manager James Hendry at Orchard Lake Stock Farm.

ORCHARD LAKE STOCK FARM



ORCHARD LAKE STOCK FARM

THIRTEENTH ANNUAL SALE

At Kentland, Indiana — June 7th, 1922

65 HEAD

"A Fairfax Never Disappoints—But Always Satisfies"

Ten sons of Perfection Fairfax, the last offering of progeny of this great bull.

Two grandsons of Perfection Fairfax, by his grand champion son Brummel Fairfax.

Six daughters of Perfection Fairfax.

Twenty cows with calves at side by sons of Perfection Fairfax.

Twenty yearling heifers, the choicest collection of young stock-show prospects and future herd matrons ever offered by this farm.

Then two-year-olds of proven individuality and breeding and carrying Perfection Fairfax and Farmer Blood.

Every animal offered carries a guarantee of health and breeding.

WARREN T. McCRAY, Prop.
JAMES HENDRY, Manager

KENTLAND, INDIANA



ORCHARD LAKE STOCK FARM

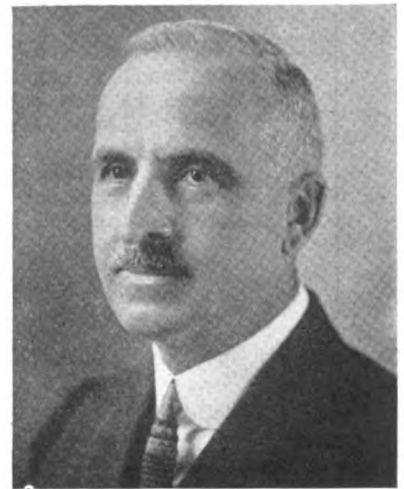
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Here is another fine farm using Richards-Wilcox Hardware

It surely is gratifying to us to know that every notable farm featured in **Farm Mechanics** to date has been a user of Richards-Wilcox hardware. The R-W installation on Orchard Lake Stock Farms is just another proof of the high regard held by the farm world for our hardware.

When you need house, barn or garage door hangers, you can be sure of satisfaction when they bear the R-W mark. Dairy and stock farmers have found our Over-Way conveying systems great time and money savers. R-W grindstones have long been popular favorites. Let us send you copy of our latest catalog, P-16.



W. H. FITCH
Pres. and Gen'l Manager
Richards-Wilcox Mfg. Co.
Owner of Fitchome Farms.



Richards-Wilcox Mfg. Co.

A Hanger for any Door that Slides

AURORA, ILLINOIS, U.S.A.

Minneapolis
Philadelphia

Chicago
Boston

New York
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Cleveland
Indianapolis

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San Francisco

RICHARDS-WILCOX CANADIAN CO. LTD.
Winnipeg LONDON, ONT. Montreal



Pure-Bred Holstein Cattle on Fitchome Farms, Fox River Valley, near Aurora

"Splendid Satisfaction!"

Governor McCray of Indiana, Proprietor of Orchard Lake Stock Farm, recommends Republic Trucks.



WARREN T. McCRAY
GOVERNOR

STATE OF INDIANA
EXECUTIVE DEPARTMENT
INDIANAPOLIS

APRIL
8th
1922

Republic Motor Truck Co.,
Alma, Michigan

Gentlemen:

I am very glad to say that I have been using your trucks for the past five or six years with splendid satisfaction. The last truck purchased was probably two years ago and it has been running constantly with but very little expense.

I can cheerfully recommend the Republic Truck to anyone who is looking for satisfaction and service.

Very truly yours,

Warren T. McCray

WTMcC/H



Governor McCray's letter emphasizes the Republic Reputation for Leadership in Quality, Price and Service. Remarkably low first cost and continued low upkeep have established Republic Trucks as the most economical and profitable hauling equipment for breeders and farmers.

The Republic Line: $\frac{3}{4}$, 1, $1\frac{1}{2}$ —2, $2\frac{1}{2}$ —3, $3\frac{1}{2}$ —4 Tons Capacity.

REPUBLIC TRUCK
SALES CORPORATION
ALMA, MICHIGAN

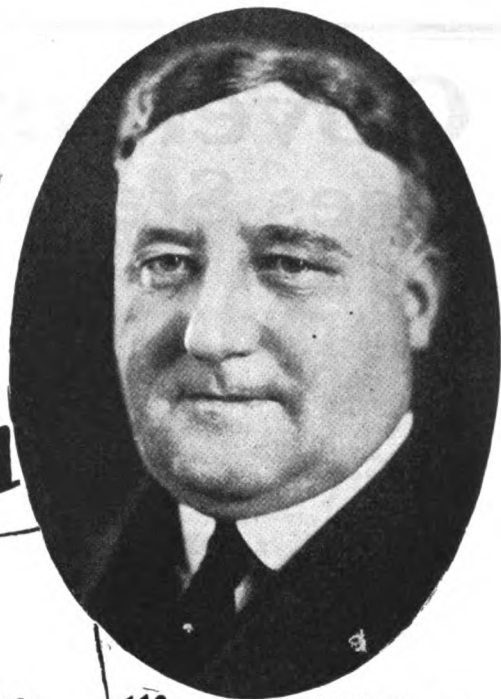
One of the Republic Trucks used on Orchard Lake Stock Farm.



Republic Has More Trucks In Use Than Any Other Exclusive Truck Manufacturer

ORCHARD LAKE STOCK FARM

What Indiana's Farmer Governor Thinks About Hog-Cholera Vaccination



Warren T. McCray,
Governor of Indiana,
owner of Orchard
Lake Stock Farm

ORCHARD LAKE STOCK FARM
HEREFORDS
KENTLAND, INDIANA

April 1, 1922.

WARREN T. McCRAY, PROP.
JAMES HENDRY, MGR.

TO WHOM IT MAY CONCERN:

I do not believe it is good business for farmers in the corn belt to attempt to raise hogs, for market or for breeding, without seeing to it that they are protected against hog-cholera.

It is my opinion that vaccination by the simultaneous method, if administered by a competent veterinarian, is the safest and in fact the only way to secure this protection.

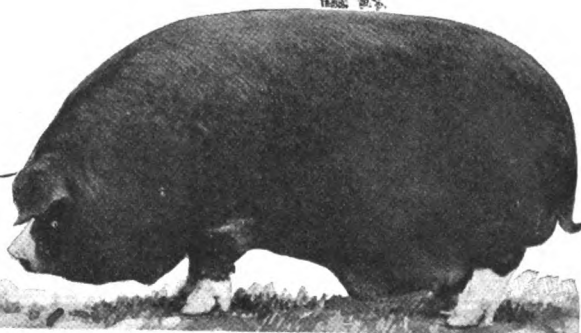
My herds are all immune, and my veterinarian is instructed to keep them so. In doing this I have used serum from the Pitman-Moore Laboratories with excellent results.

Very truly yours,

Warren T. McCray

Look for
this Trade Mark
on the Bottle

PITMAN-MOORE
Anti-Hog-Cholera Serum
and Hog-Cholera Virus



Governor McCray Uses Standard Oil Products



WARREN T. McCRAY
GOVERNOR

STATE OF INDIANA
EXECUTIVE DEPARTMENT
INDIANAPOLIS

APRIL 7, 1922

Standard Oil Co.,
Chicago, Illinois

Gentlemen:

I have been using your products on my various farms for a number of years. I can cheerfully say that the service you have rendered has been of a very satisfactory character.

I have carried a contract with your concern for more than twenty years and have never felt inclined to change it, notwithstanding that I have been importuned many times to do so.

Appreciating the quality of the service which you have given me, I am

Very truly yours,

Warren T. McCray

Red Crown

The High Grade Gasoline

enables your car to start easily, get away quickly, accelerate smoothly, and develop tremendous power and speed—and give a maximum of mileage.

Polarine

The Perfect Motor Oil

is made in four grades. It lubricates thoroughly the remotest frictional surfaces and seals pistons against loss of power.

Send for free booklets—instructive and interesting—
“What Is Good Gasoline?” “Tractor Lubrication.”

STANDARD OIL CO. (Indiana) 910 So. Michigan Ave., Chicago, Ill.

2718

You have a wonderful machine in the NISCO Spreader

THE McCray Farm is notable not because it belongs to the Governor of Indiana but because it presents a high grade example of good farming practice. Here again "The Original Wide Spreading Spreader" has won a position of high regard as it always does wherever the money-making ability of good equipment is appreciated.

ORCHARD LAKE STOCK FARM
HEREFORDS
KENTLAND INDIANA

WARREN T. McCRAY, PROP.
JAMES HENDRY, MGR.

March 15th, 1922

The New Idea Spreader Company,
Cold Water, Ohio.

Gentlemen:

I beg to advise that we consider you have a wonderful machine in the Nisco Spreader and one that gives universal satisfaction to all of its users. Its method of applying the manure to the ground is especially valuable on account of its splendid spreading facilities.

With best wishes, I am

Yours very truly,

Warren T. McCray

WTMcC/B



**Governor McCray
Tells in Two Sentences
Why You Should Want
a NISCO Spreader**

A machine that gives universal satisfaction to all of its users. Its method of applying the manure to the ground is especially valuable. Aren't those the best reasons in the world why you should want to buy a spreader? And don't forget that prices on the NEW IDEA and NISCO are lower right now than they have been for years.

See these good spreaders at your dealers or write us for circulars and free booklet on farm fertility.

NEW IDEA and NISCO Spreaders

have a sturdy strength, a freedom from trouble-inviting mechanisms, that spells many years of hardest service. They are light in draft and easy to load; and most important of all—they unfailingly shred the manure fine and spread it in a wide, even blanket that gives you the full benefit of its fertilizing value.

THE NEW IDEA SPREADER COMPANY "Spreader Specialists"
COLDWATER, OHIO

Branches at Peoria, Ill.; St. Louis, Mo.; Harrisburg, Pa.; Syracuse, N. Y.; Indianapolis, Ind.; Columbus, Ohio; Chicago, Ill.; Kansas City, Mo.; Sioux Falls, S. D.; Minneapolis, Minn.; Jackson, Mich.; Omaha, Neb.; Waterloo, Iowa

Titan Secure in First Place on the Orchard Lake Farm

ORCHARD LAKE STOCK FARM
Herefords
KENTLAND, INDIANA

WARREN T. McCRAY, Prop.
JAMES HENDRY, Mgr.

April 12, 1922.

**INTERNATIONAL HARVESTER
COMPANY,**
Chicago, Illinois.

Gentlemen:—I have used several different makes of tractors on my Orchard Lake Stock Farm, among them the 10-20 Titan. Your tractor was used in all kinds of work on the farm, and gave such good satisfaction that I purchased the second one, with the same good results.

When in need of another tractor, it certainly will be one of your make.

Yours very truly,

(Signed) Warren T. McCray.

It is plain from the letter reproduced at the left that *power* farming on the Governor's estate means *Titan* farming. The Governor and his management base their Titan preference on an all-around experience that has included the opportunity of comparison with other tractors.

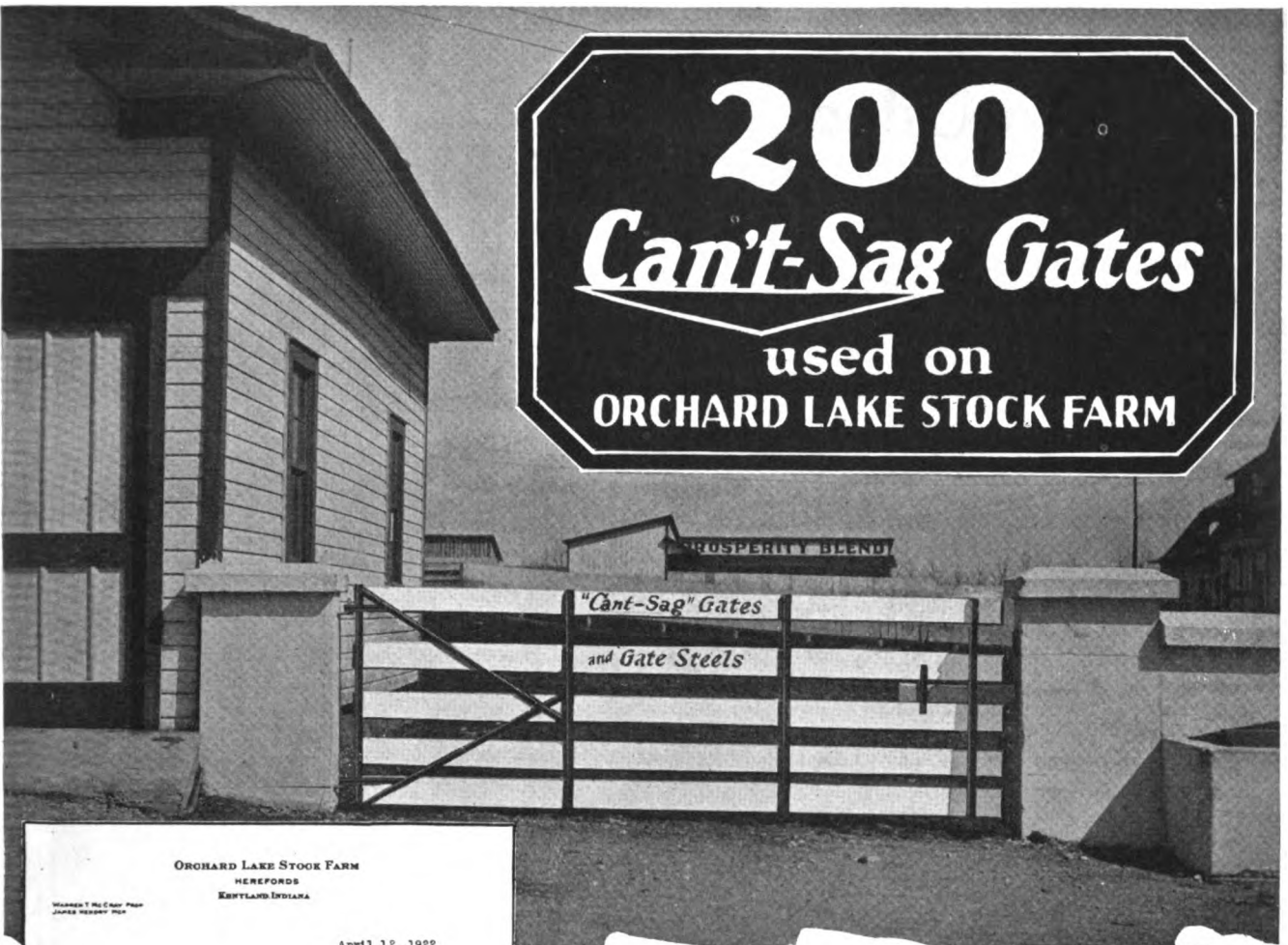
The Titan Tractor is today demonstrating its efficiency and reliability in belt and drawbar work at the hands of over seventy thousand satisfied owners. Its 3-plow reserve power, cutting farming costs in all field operations, and its especial fitness for operation with belt machines, is placing it on many more farms each day. The price is now \$700 f. o. b. Chicago. In view of the late Spring, many farmers will be glad to know that the Harvester Free Plow Offer has been extended to May 20. See the McCormick-Deering dealer for particulars.

INTERNATIONAL HARVESTER COMPANY
OF AMERICA
(Incorporated)
CHICAGO - U S A



ORCHARD LAKE STOCK FARM

200 Can't-Sag Gates used on ORCHARD LAKE STOCK FARM



ORCHARD LAKE STOCK FARM
HEREFORDS
KENTLAND INDIANA

MANAGED BY H. C. CARR, Pres.
JAMES HENNING, Mgr.

April 12, 1922

The Rowe Mfg. Co.,
Galesburg, Ill.

Gentlemen:-

I have about two hundred of your "Can't-Sag" gates in use on my various farms, and when in need of more gates, I always buy the "Can't-Sag"

Yours very truly,

Harmon D. McCray

WDMC

Good Enough to Use Anywhere Cheap Enough to Use Everywhere

More than a million in use on America's finest farms. Built in the world's largest gate factory. Laid down in your town at prices lower than you can build short-lived all-wood gates at home. Every gate has from 6 to 8 backbones of steel—double bolted to every board at every joint. They can never sag—never warp or twist out of shape. They stand straight and true for years. Won't rot out nor break. Never drag. Always swing freely and easily. No lifting—no freezing into ground.

Cost Less Than All Wood Last 5 Times as Long

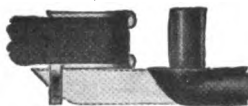
Why pay high prices for steel, wire or gas pipe gates when you can get this combination wood and steel gate that will last longer, hang better, swing easier, look better and give better satisfaction—at a cost lower than all wood gates? Get our latest free Catalog. See how Can't-Sags are made in the world's largest factory—how they are sold at such astonishingly low prices in almost every town. See why stockmen prefer Can't-Sags—why they can't injure farm animals. See how you can build your own Can't-Sag Gates at home if you prefer and save money. We will furnish complete Gates or everything but the boards. Write for Free Catalog today.

Note How Can't-Sag Gates Are Made

Not a nail used anywhere in them. Every board is double bolted between four pairs of angle steel uprights. That means 50 bolts must break before this gate can sag even one-quarter of an inch.

The 8 upright steels and the 8 Triangle Truss Steel Braces give them a stiff, strong backbone of steel which always holds them plumb and true. They have more than 10 times the strength and 3 times the life of any home-made all wood gate, yet weigh one-fourth less, too. Every Can't-Sag Gate has a self-locking hinge which prevents gate from being lifted off hinges when closed.

Barb Wire Extensions and Gate Elevating Attachments can be furnished. (See Catalog.)



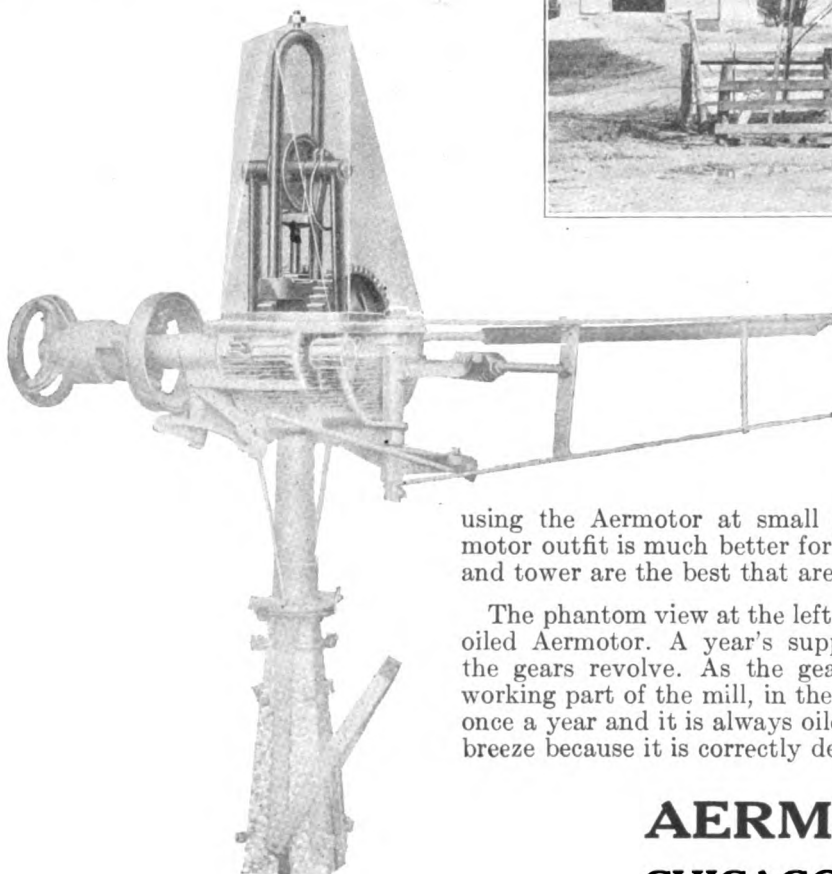
ROWE MANUFACTURING CO., 312 Adams Street, GALESBURG, ILL.

ORCHARD LAKE STOCK FARM

The Auto-Oiled Aermotor

This picture shows one of several Aermotors used on Gov. McCray's farms. In a recent letter Gov. McCray says: "I have a number of Aermotors in use on my various farms, and they have given great satisfaction. When in need of more power of this kind it will be the Aermotor."

The Aermotor is rapidly supplanting other windmills because of the wonderful service which it gives. It is perfectly and completely self-oiling. Not only are the bearings flooded with oil but the double gears run in oil in a tightly enclosed gear case. The Aermotor gives more service, with less attention, than any other piece of machinery on the farm.



Those who are familiar with the Aermotor will easily see that the tower in the picture above is not an Aermotor tower. The windmill originally used on this tower has been discarded and supplanted by the Auto-oiled Aermotor. Many thousands of Aermotors are now used on old towers to replace other makes of windmills. In this way it is possible to obtain the many benefits from

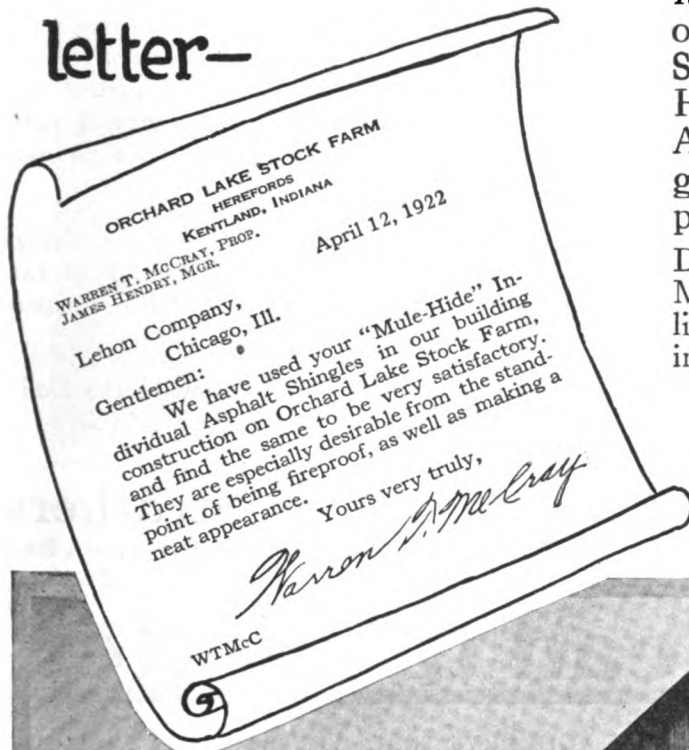
using the Aermotor at small expense. Of course, a complete new Aermotor outfit is much better for you are sure then that both the windmill and tower are the best that are made.

The phantom view at the left shows the important details of the Auto-oiled Aermotor. A year's supply of oil is carried in the case in which the gears revolve. As the gears turn the oil is circulated thru every working part of the mill, in the simplest and surest way. Oil an Aermotor once a year and it is always oiled. The Aermotor pumps in the lightest breeze because it is correctly designed, well made and perfectly oiled.

AERMOTOR CO.
CHICAGO, ILLINOIS

Mr. McCray Indorses MULE-HIDE Individual Asphalt Shingles

Read his
letter—



Mr. McCray, Governor of Indiana, and owner of the famous Orchard Lake Stock Farm, is well pleased with Mule-Hide roofing. He chose the Individual Asphalt Shingles for this corn crib and grain elevator because they are fireproof, attractive and permanent.

Discriminating farmers will always select Mule-Hide. It meets all requirements and lives up to its service record of "Not a kick in a million feet."

*Write for your sample and
descriptive literature*

THE LEHON CO.
45th St., and Oakley Ave.
CHICAGO ILLINOIS





Write today
for our illus-
trated book on
Lightning and
its control.



Discriminating Buyers Select the Dodd System

With thousands invested in buildings that house cattle worth thousands more, the thought uppermost in the mind of the owner of Orchard Lake Farm was the selection of a system of rodding upon which he could rely absolutely. He chose *The Dodd System*.

Rodding buildings isn't just a job. It is an engineering problem to be worked out in a scientific manner. Good lightning rods, improperly installed, are worse than no rods at all.

When you decide to protect your buildings with *The Dodd System*, you are certain of two things—the highest quality materials and expert installation.

Let us give you the name of the Dodd System representative nearest you.

Dodd & Struthers

111 Eighth Street

Des Moines, Iowa

"Read this letter"

April 21, 1922.

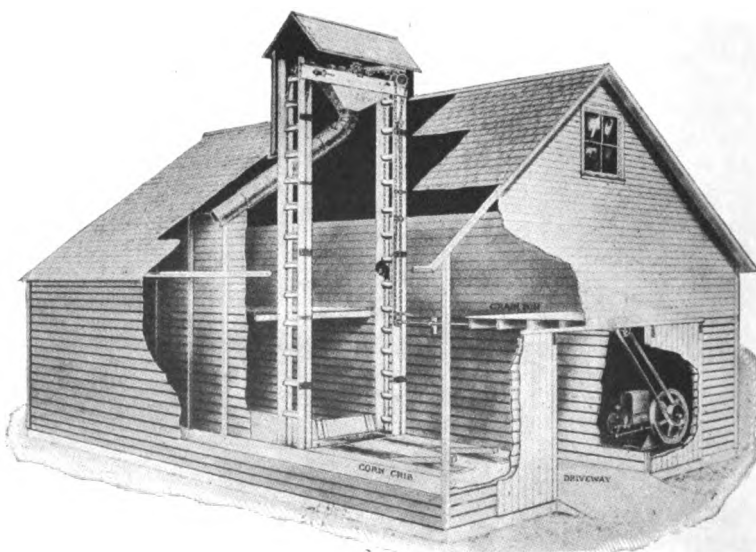
MEYER MFG. COMPANY,
MORTON, ILL.

Gentlemen:— We have in our granary on **ORCHARD LAKE STOCK FARM**, one of your Meyer Grain Dump and Elevator installations, which is giving perfect satisfaction, and we can cheerfully recommend same to anyone in need of such equipment.

Yours very truly,

(SIGNED) WARREN T. MCCRAY

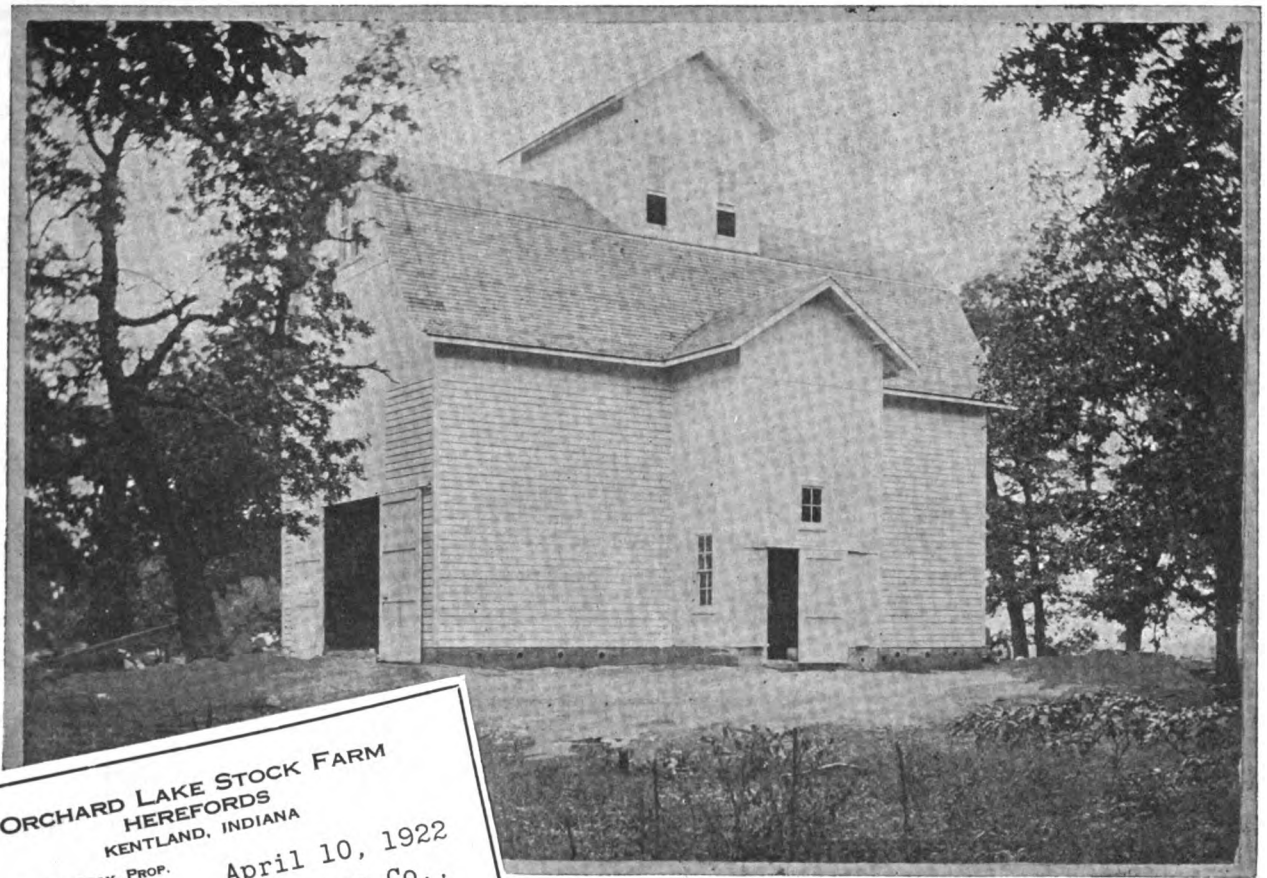
Now that you have read Mr. McCray's letter, we want to tell you that "perfect satisfaction" expresses the sentiments of all of our clients. They can't help being satisfied with "Meyer" performance.



Our illustrated catalogue will give all details of the Meyer Grain Dump and Elevator. Write for your copy today.

The Meyer Mfg. Co.
302 Walnut Street
MORTON, - ILLINOIS

ORCHARD LAKE STOCK FARM



ORCHARD LAKE STOCK FARM
HEREFORDS
KENTLAND, INDIANA

WARREN T. MCCRAY, PROP.
JAMES HENDRY, MGR.

April 10, 1922

The Frantz Manufacturing Co.,
Sterling, Illinois.

Gentlemen:—I am pleased to
advise you that we are using
your Glide Storm Proof Hangers
and Tracks for the heavy doors
on our buildings at Orchard
Lake Stock Farm and find same
very satisfactory, and can
recommend them to anyone need-
ing such material.

Yours very truly,

WTMc:B

Warren T. McCray

Orchard Lake Stock Farm

O.K.'s

**FRANTZ
HARDWARE**

The good judgment of Mr. McCray in selecting Frantz Hardware is verified by his testimonial letter. This letter is only one of hundreds similar, received from satisfied customers all over the country.

Discriminating customers everywhere choose Frantz Hardware for its strength, efficiency and durability.

Your Hardware Dealer will be glad to show you our big line of distinctive barn and garage door hardware and in each particular case, Frantz supplies the demand, no matter how exacting. See your dealer or write us.

Our catalogue will be sent upon request

FRANTZ MANUFACTURING CO.
STERLING, ILLINOIS

ORCHARD LAKE STOCK FARM

ORCHARD LAKE STOCK FARM
WESFORD
KENTLAND, INDIANA

April 12, 1922

The Papec Machine Company,
Shortsville, N. Y.

Gentlemen:-

Several years ago I purchased one of your K-19 Ensilage Cutters, and have used same in filling my nine - two hundred ton silos, for the past five or six years, to our entire satisfaction.

The cost for repairs has been almost negligible, and I can recommend the "Papec" to anyone in need of same.

Yours very truly,
Harmon A. McCray

W2600

Read What Governor McCray Says:

"Several years ago, I purchased one of your K-19 Ensilage Cutters, and have used same in filling my nine two-hundred ton silos, for the past five or six years to our entire satisfaction."

Our files abound in hundreds of letters from other successful farmers who are equally enthusiastic over Papec performance. Throughout the country, the Papec is the choice of men who know machinery.

The Powerful
PAPEC
Ensilage Cutter

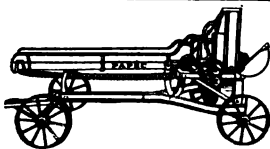
The Papec is made in four sizes. One is suitable for your silo and your power, even if only 3 H. P. All are guaranteed to cut and elevate more ensilage with the same power than any other blower cutter.

Our 1922 Catalog fully describes them. Write for your copy today. If you state the size of the silo you have or intend to put up and the name and address of your dealer, we will send you free our 50-page Farmers' Record and Account Book.



PAPEC MACHINE COMPANY
Box 168, SHORTSVILLE, NEW YORK

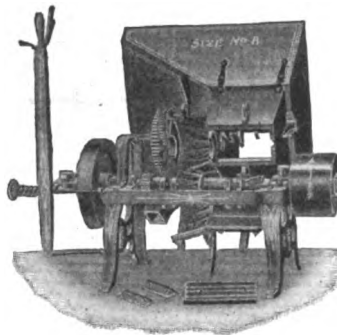
36 Distributing Houses Enable Papec Dealers to Give Prompt Service.



BOWSHER FEED MILLS—Capacity, Endurance

BECAUSE they pass the higher requirements of mechanical construction—and stand the test of time—these mills are found on the best equipped farms.

Because they turn out work in quantity, and easily "stand the racket", they are **first choice** in the big feeding yards.



10 SIZES

2 H. P. to 25 or more.

Four **good** selections for Tractor Drive

Light Running.

Convenient to Operate.

Grind **all** your grains on the Bowsher. Make **full use** of your power, whether it be large or small.

WRITE TODAY FOR CATALOG

THE L. N. P. BOWSHER COMPANY - South Bend, Indiana

They Overlooked the Diamonds

THERE is a modern flippancy to the effect that, "What you don't know won't hurt you." It is also a fallacy. For instance:

The farmers of Kimberley were a disgusted, disheartened lot. They said the soil was too rocky to earn them a living. Some of them left. Others died in poverty.

And all the time their children were playing with diamonds.

But the farmers *didn't know*. They thought the priceless gems were pebbles.

Don't be like those Kimberley farmers. *Know!*

Don't seek opportunity in some distant place and overlook the diamonds that are daily within your grasp. *Know!*

Advertising is a mine of opportunity. It tells of values you wouldn't know about if it were not there to guide you.

The secret of economical buying is information. The man or woman who is best informed is the one who buys to best advantage.

Read the advertisements. Know!

—FARM MECHANICS.



The Result of Specialization

Many men have given their best efforts and the best years of their lives to the developing and perfecting of Case Threshers. Eighty years ago the first machine was built, then the best of its kind. Today Case Threshers represent the most highly developed machines of their kind used on farms.

This development and progress has led to the production of seven different sizes of Case Threshers, all of practically the same type. These machines will meet every power requirement and every threshing condition.

Depending on the grain threshed and its condition, the

20 x 28	requires from	15 to 20 H. P.
22 x 36	"	" 20 to 28 "
26 x 46	"	" 25 to 35 "
28 x 50	"	" 30 to 40 "
32 x 54	"	" 35 to 50 "
36 x 58	"	" 45 to 65 "
40 x 62	"	" 60 to 80 "

All Case machines are made to do their work with efficiency and smoothness, in these respects exceeding perhaps any other machine used in farming.

They are of all-steel construction and so well made that they will last over 20 years with reasonable care, twice as long as most other farm machines. Because of the many superior qualities of these threshers, they are universally preferred by farmers and threshermen.

Interesting new booklets on the advantages and money-making possibilities of Case Threshers are now ready. Write for your copies or see the nearest Case dealer.

ORCHARD LAKE STOCK FARM

KENTLAND, INDIANA

April 13, 1922

J. I. Case Threshing Machine
Company,
Racine, Wisconsin.

Gentlemen:

We have in use at Orchard Lake Stock Farm one of your 36-58 Separators, which has been giving very satisfactory service.

In my opinion any one in the market for a Separator could make no mistake in purchasing a Case.

Yours very truly,
(Signed) WARREN T. McCRAY.

WTMC:B

J. I. Case Threshing Machine Company

Dept. G451

(Established 1842)

Racine

Wisconsin



Saving the Hogs from Cholera

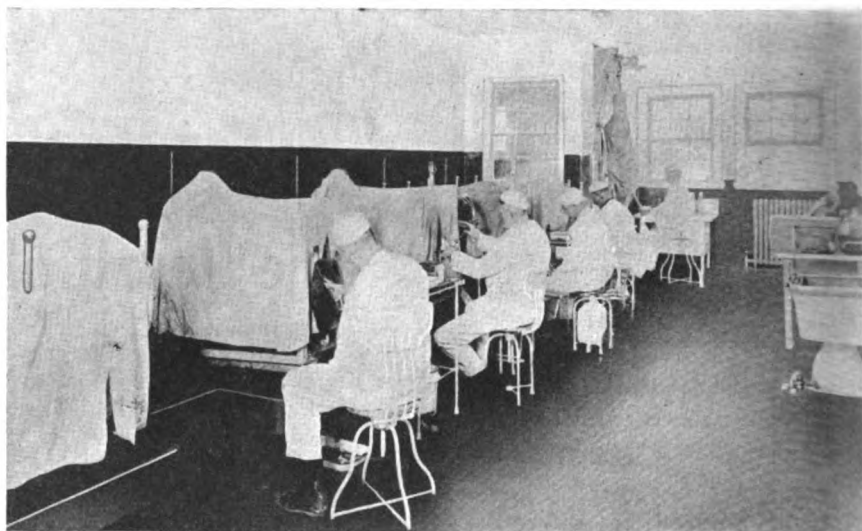
\$30,000,000 Annual Loss Can Mostly Be Prevented By Using Anti-Hog Cholera Serum and Hog-Cholera Virns, Which Constitute the Double Treatment

MORE than a dozen years ago scientists of the United States Department of Agriculture discovered that hogs can be made absolutely immune to cholera. In spite of this fact the annual losses to farmers of the United States thru cholera in their droves is around \$30,000,000. An obvious conclusion is that some farmers would rather gamble with their hogs than to take the sure method of prevention by injecting hog-cholera virus and anti-hog cholera serum.

Undoubtedly some of this reluctance of farmers to use cholera prevention is caused by the poor results with the treatment some hog owners have had. Injecting the "double treatment," as the combination of virus and serum is called, has its attendant dangers if handled ignorantly or carelessly, or if the virus or serum is not pure and free from other disease germs. This latter difficulty, however, has been overcome by the leading manufacturers of the treatment thru care in preparation that rivals that of serums made for use in the human body.

The hog cholera germ works rapidly and few animals that have not been treated survive it. The

moment the germ begins its activities nature always develops an anti-toxin to counteract the poison of the disease. If the animal can survive the cholera long enough the natural anti-toxin will bring it thru and thereafter it is immune to the disease.



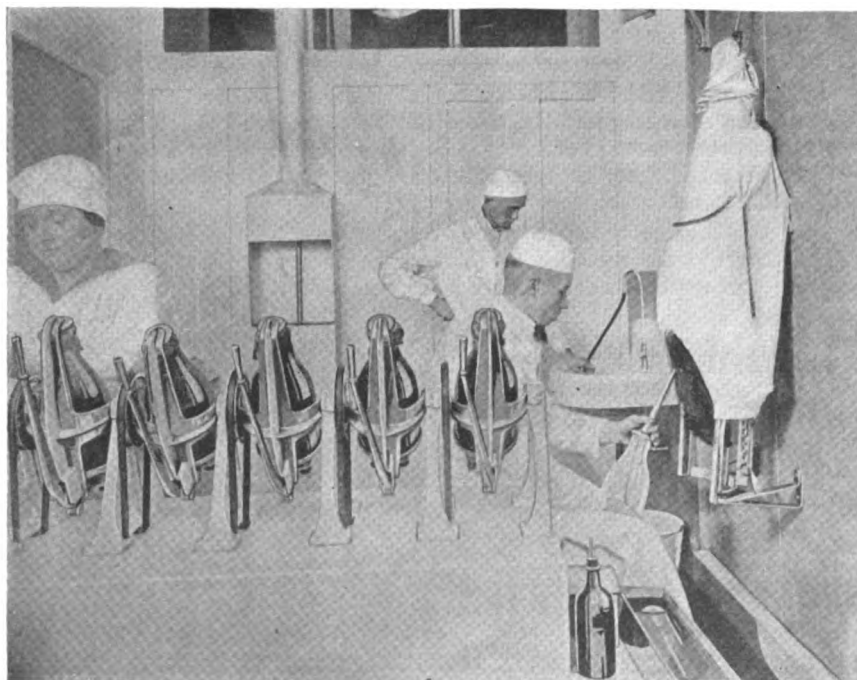
Bleeding Room in Anti-Hog Cholera Serum Laboratory. This blood also is drawn into closed sterile bottles.

It is by combining the cholera virus and these anti-toxins in the blood of a healthy animal that he is immunized from the disease. The virus is produced by drawing and processing the blood of a hog that is sick with cholera in a virulent form. The serum comes from blood that is filled with anti-toxin.

The two products when properly injected into the hog constitute the double treatment.

The extreme care with which one of the leading and largest manufacturers of anti-hog cholera serum and hog-cholera virus produces these products and the methods by which the virus and serum are secured is most interesting. Also it is remarkable to what a high degree of efficiency with regard to insuring purity and potency their manufacture has been brought.

The laboratories in question are built and equipped almost exactly as a modern hospital. The walls and floors and all of the equipment are of steel and enamel and are kept spotless. The workers in the various departments are dressed in sterile white clothing similar to



Bleeding Room in the Virus Laboratory. The virus is drawn into closed, sterilized bottles thru a special hollow knife, thus preventing exposure to the air and possible contamination.



One Man



Two Men

Why Use Two Men For This One-Man Job?

HITCHING a horse mower behind your Fordson requires an extra man on the mower seat to accomplish only fair results at best. There are other factors, too, which make the horse mower expensive to use with the tractor. There is wheel slippage, loss of time, and loss of power.

The one way to take full advantage of your tractor power and benefit by the time it is able to save you in cutting your hay, is with the

Roderick Lean
CUTMORE

Worm-Driven Tractor Mower

A one man outfit, built as a tractor mower must be built for hard service and good results. Attaches so solidly to the tractor that it seems a part of the tractor itself. Yet the Cutmore is easily handled, entirely operated from the tractor seat, and offers no possibility of damage to the tractor.

With the Cutmore you watch your work as you drive. To follow the surface of the ground

with the tractor wheels, the cutter bar is placed on the right side, in front of the rear wheel, where it is always in full view and works across dead furrows and ditches without damage.

The Cutmore attaches without expert assistance and without changes to the tractor. The cutter bar may be disconnected in a few minutes for using the tractor for other work. Draw bar is always available for hauling a wagon, hay-loader, etc.

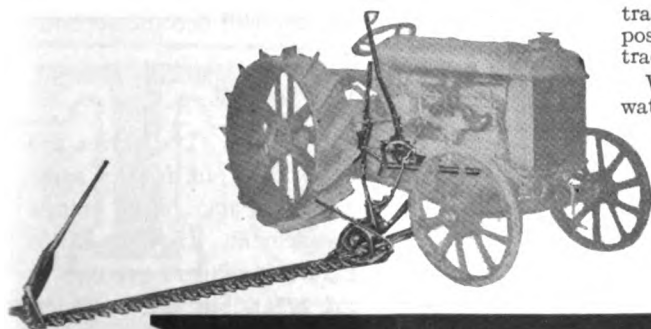
Attached to your Fordson the Cutmore means greater speed and economy in handling your hay crop, and a bigger and better crop by quick, and timely cutting.

See your Fordson dealer now for full information, or write us for our folder M 41.

Roderick Lean Mfg. Company
MANSFIELD, - - - OHIO

Builders of

Automatic Tractor Harrows
Automatic Orchard Disc Harrows
Automatic Vineyard Disc Harrows
Automatic Single Disc Harrows
Steel Spike Tooth Harrows
Tractor Spring Tooth Harrows
For the Fordson



that worn by doctors and nurses in a hospital operating room, and at no time during the process of extracting the virus from the cholera stricken hogs and the blood from the immune hogs are the animals or fluids touched by hands.

The hog hospital contains 38 pens, each pen having a capacity of 12 to 14 hogs. Here young hogs, weighing from 60 to 100 pounds are inoculated with cholera germs. When the hogs have reached nearly the last stage of the disease, they are clamped into a crate, suspended and wrapped in a cloth which has been soaked in carbolic acid. They are run into the virus collecting room, where their throats are antiseptitized, and an attendant plunges a hollow knife into the neck artery. The blood of the hog flows into a sealed container thru the hollow of the knife. This blood contains the cholera germs that are used in the double treatment.

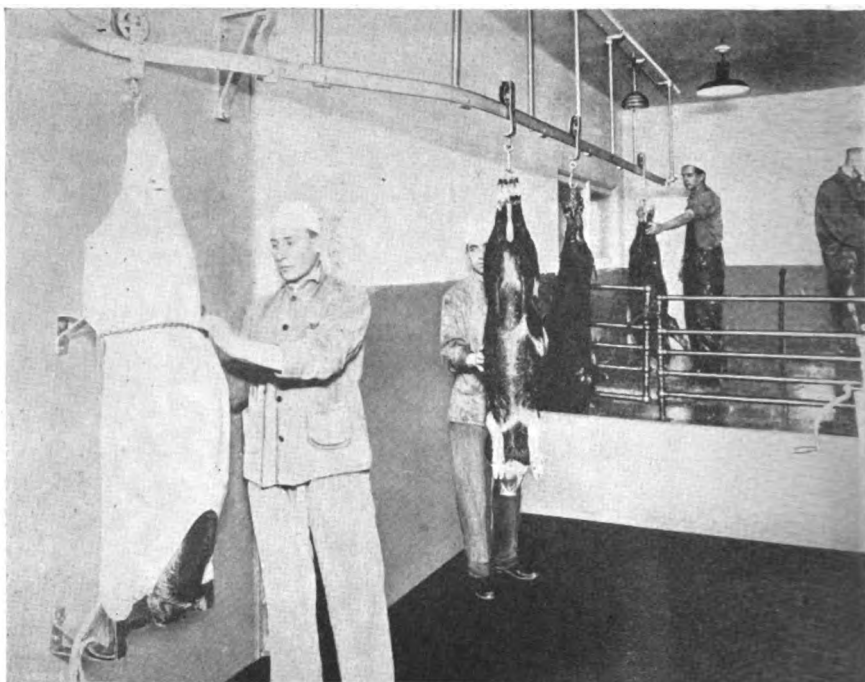
In another room in the laboratories, hogs that contain the anti-toxin that battles with the cholera germs in a healthy hog and makes him impervious to the disease, are kept. These hogs weigh up to 200 pounds. Their blood is extracted in much the same way as that containing the virus. The carcasses of the cholera infected animals are turned into tankage, after they have been examined to discover if they are free from disease other than cholera.

After both virus and serum have gone thru the various processes that make them ready for use, they are tested on healthy pigs. Part of the animals in a pen are given the double treatment; check pigs are inoculated with cholera virus. To prove the value of the serum, those given the double treatment must remain healthy, while those dosed with the virus must sicken with the disease.

All of these operations are under the supervision of government inspectors, while expert bacteriologists of the laboratories make sure that the virus and serum are potent and that they contain no other disease germs.

More than 10 years experience in the manufacture of hog-cholera virus and anti-hog cholera serum has caused this concern to emphasize the advisability of having a licensed veterinarian administer the treatment, the best and purest of serums oftentimes becoming contaminated thru carelessness in injecting it into the animals on the farms.

More general use of the double treatment for hog cholera will save millions of dollars for hog owners and conserve that amount of animal food to the country.



Preparation Room in a Hog-Cholera Virus Laboratory. The virus pigs are in preparation for collecting virus. The animals are restrained on specially designed operating doors, and covered with antiseptized shrouds. The site of the operation is shaved and coated with iodine.

Careful Pruning Aids Young Trees

A LITTLE thinning and minor cutting back to form a desirable framework and prevent bad crotches in young apple trees prolongs life and makes for better trees, say the fruit men at the New York State College of Agriculture. The removal of a little wood will not materially reduce the size of the tree or delay its bearing. On the other hand, experiments show that severe pruning of young trees delays bearing and reduces production.

The tree is permitted largely to shape itself. Three or four, or sometimes only two, branches are left when the tree is planted; more than this is likely to result in crowding and splitting as the tree grows. Two feet is a good height at which to start the head. Bearing age is considerably delayed by cutting off the lower branches to secure a high-headed tree.

As the tree grows older, branches that appear well apart on the main branch are retained and pruning is largely restricted to the removal of badly interfering or crowding branches. All but one of the shoots of bad crotches are headed in so they will become secondary branches.



H OUSECLEANING time is here. The stoves are down and the furnace cleaned out for its summer rest. Wrestling with stoves and pipes brings thoughts of a furnace in the basement. If there is not one installed, this is a good time to plan to get one in before fall. The cost is not great, but the comfort, saving of labor and satisfaction that a basement heating plant brings is worth the cost many times.

Keep Your *HANDS* on the Wheel

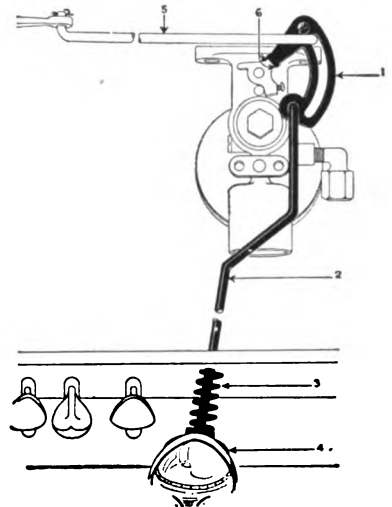


The simplicity, safety and convenience of the TURNER FOOT ACCELERATOR are instantly recognized by any Ford owner. It is the liveliest proposition for good dealers in recent years. Below are a few of its advantages.

The TURNER Foot Accelerator

Can be instantly installed by anyone. Permits positive and quick throttling when you want it and need it. Gives use of both hands when driving and signalling in or out of traffic. Positive and direct connection with carburetor. No wires, cables or spring devices to get loose and cause lost motion. No interference with hand throttle. Write us for further information. Price, complete with foot rest, \$1.

Give
'Er
The
Gas
With
**YOUR
FOOT!**



Price Now
\$3.60

TURNER
Made for ALL

2 IN 1

TIMER
Ford Motors

Every farmer — every Ford owner — should know about the TURNER TIMER. It will increase the efficiency of any farm on which Ford motor power is used.

A TURNER TIMER on your Ford car, truck or tractor, will give increased power on hard pulls, an instant start in all weathers, decreased gasoline consumption. In many cases it stops the fouling of the two front plugs. It requires NO OILING and is oil, grease and waterproof. Eliminates "kicking" from shorted timer wires. Furnished complete with wiring assembly in oil and water-proof metal conduit. Fully guaranteed.

TURNER MANUFACTURING CO.,

Kokomo, Indiana

TURNER

MOTOR DEVICES

Septic Tanks an Essential

California Farmers Find Sewage Disposal Systems Promote Health and Happiness

By H. J. BAADE,

County Agricultural Agent, Napa County, Cal.

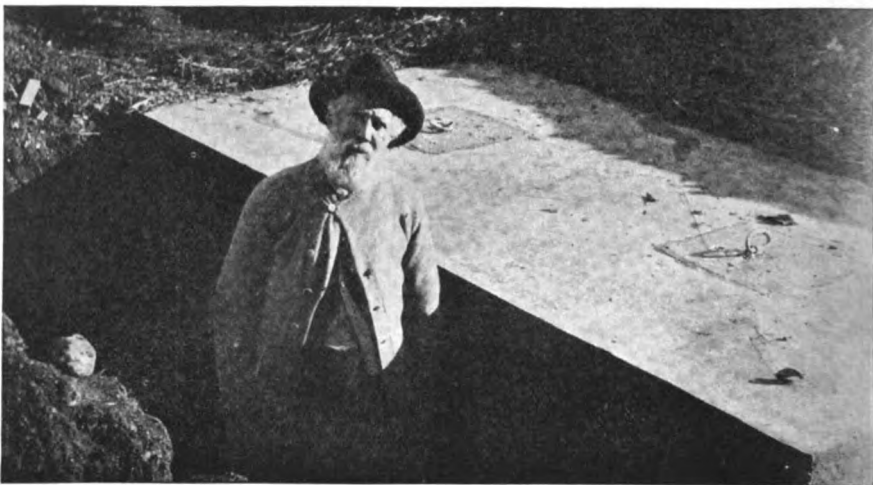
WITH the steady growth of population in the rural sections of our country we find the sewage disposal problem becoming more and more important. The day when rural sanitation was little thought of is past and people have come to realize that "the great out-of-doors" is now a place entirely free from disease and filth. In the country there is no health official to see that drinking water is uncontaminated by filth and dangerous bacteria and to locate wells and buildings as they should be. The farmer himself must attend to these matters.

In order to have the best possible sanitary conditions on the farm there should be a practical sewage disposal system. The best and most satisfactory, as well as economical, sewage disposal plant is the concrete septic tank. A septic tank will do away with the nauseating, fly-breeding, out-of-door privy. It will make it unnecessary to throw wash water and worthless swill out of the back door, where it will cause flies to collect and the liquids to perhaps percolate thru into the water of a nearby well.

Farmers in Napa County have come to a realization of these facts, and within the past six years have built 1,550 concrete septic tanks. Some farmers have as many as three tanks on one ranch, each house on

the place being connected to a separate tank. To date we have received no complaints from any of these, and all who have installed them are more than pleased with the equipment.

The accompanying drawing shows the details of the tank in general use in this country. The top, bottom and walls of the tank are built of concrete 5 inches

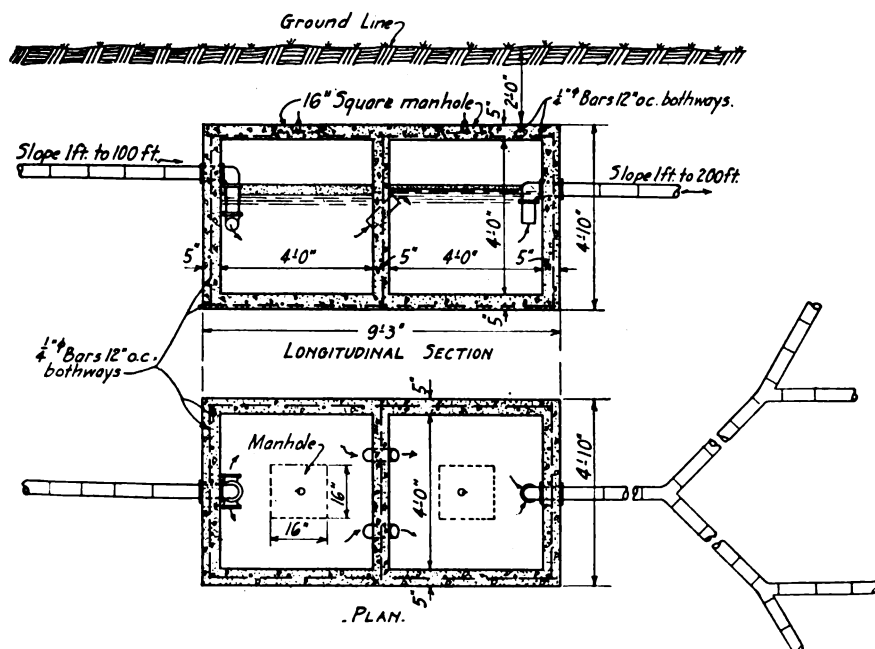


A Satisfied Owner and One of the Tanks Built from the Plans Illustrated. One thousand five hundred and fifty tanks have been built in Napa County, Calif., within the past six years.

thick. There is a concrete partition between the first and the second compartments of the tank. The sewage is carried from the first compartment to the second compartment by a 4-inch tile set in the concrete partition at an angle of 45 degrees, with the lower end not less than 14 inches from the bottom of the tank, and its upper end not less than 14 inches from the top of the tank, the upper end of the tile being in the second compartment. This tile is placed in this manner so that the flow thru it will not disturb the sludge in the first chamber or the scum in the second.

The bacteria which decomposes the sewage in the tank is present in all sewage, but a tank of this kind is essential to complete decomposition. Lye and strong disinfectants should not be thrown into the sewer, since such material would destroy bacterial action in the tank. Nor should storm waters from the roofs of buildings be run into the tank.

The type of tank here illustrated is very easily constructed.



Ground Plan and Vertical Section of Septic Tanks Built in Napa County, Calif.

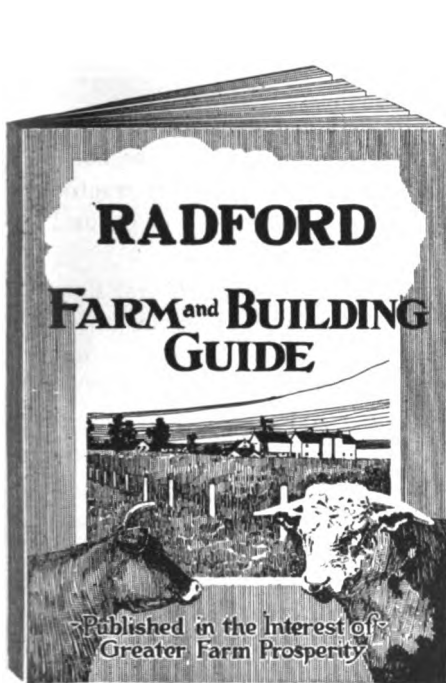
Books Cost-Free to You!

WE guarantee to send you your choice of these books **ABSOLUTELY FREE**—without one penny of extra cost to you—upon receipt of your subscription to **FARM MECHANICS**, the illustrated magazine for progressive farmers. **FARM MECHANICS** magazine alone is well worth several times the subscription price of \$1.00 per year. You cannot make a mistake in subscribing or renewing your subscription now, and thus be entitled to this selection of useful books.

You will like **FARM MECHANICS** because it is different from any other agricultural publication you have seen. It has a four-color lithographed cover each month

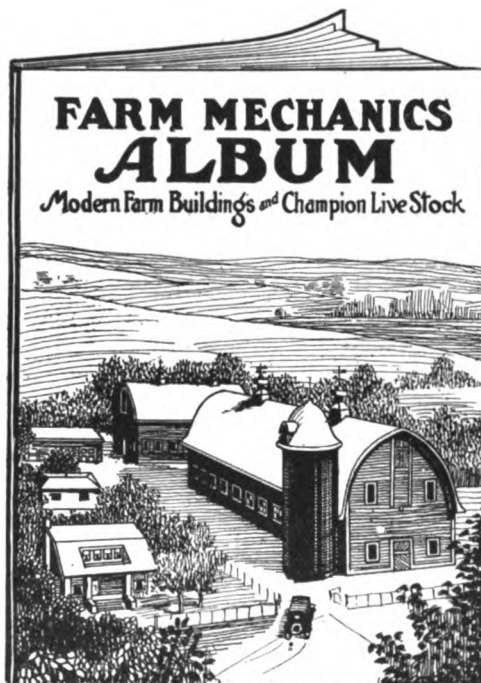
and is profusely illustrated thruout. **FARM MECHANICS** is devoted to the tractor, the truck, the automobile, power farming machinery, water pressure and light systems, better farm buildings and all sorts of appliances and devices that will save you time, money and labor in your work.

With not less than 100 pages a month, in twelve months **FARM MECHANICS** will provide you with more than 1,200 pages of reliable knowledge. It will show you the way to greater profits and satisfaction in farm work. It will assist you in learning many short cuts in your daily work.

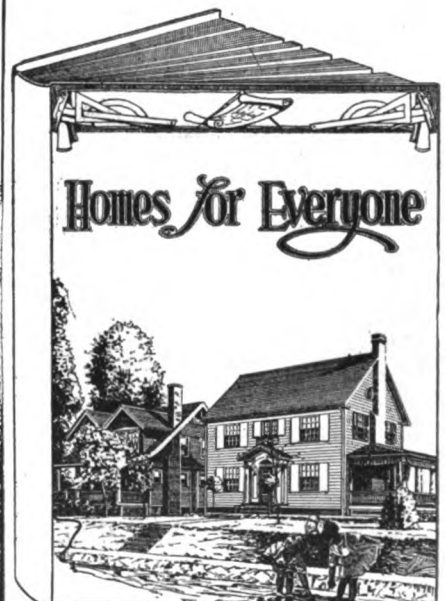


A Storehouse of Information

The **FARM AND BUILDING GUIDE** contains 160 pages of useful data on Farm Buildings, ideas on remodeling, articles on alfalfa, corn, fertilizers, dairying, hogs, chickens, beef cattle, horses, orchards, and diversified farming; in fact, is a veritable storehouse of information for everyone. Size 8½ by 11½ inches.



The **ALBUM** is a big book. Size 15½" x 18" on heavy art paper. Fourteen pages are in Full Colors—lithographed. Prize individuals of every live-stock breed are pictured, 89 in number. Twenty-four modern Farm Buildings with dimensioned floor plans are presented.



138 NEW HOUSE PLANS

This new book, published to satisfy the enormous demand for the latest ideas in up-to-date modern homes in every community, is just what you need. It is filled with suggestions that will help home builders to choose homes of which they will be proud. The designs are modern in every respect. They show not only comfortable places in which to live, but they give something of real value for the money invested.

TEAR OFF HERE ----- **TEAR OFF HERE**

Your Choice—One of These Books Free

FARM MECHANICS,
1827 Prairie Ave., CHICAGO, ILL.

Gentlemen: Enclosed find \$1.00 for 1 year of **FARM MECHANICS**. Start subscription with _____ number. Send me **FREE** postage prepaid the Book marked below:

☐ Radford's Farm and Building Guide

Name _____

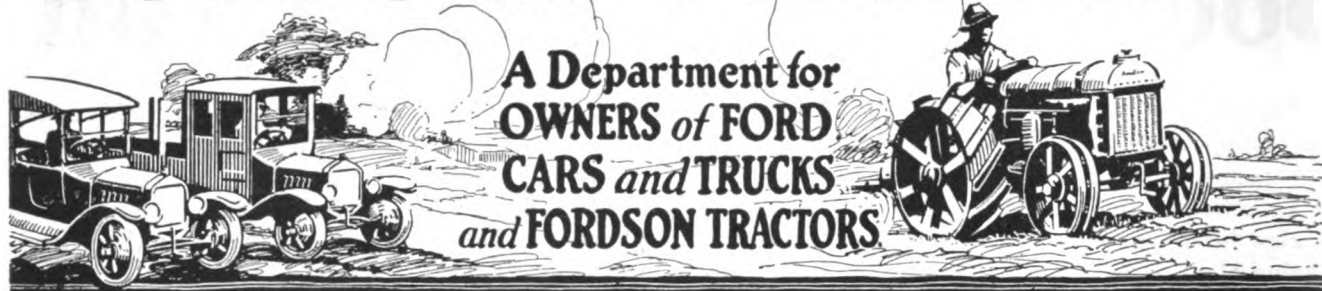
☐ "F. M." Live Stock Album

Post Office or R. F. D. _____

☐ Homes for Everyone

State _____

FORDS *and* FORDSONS



“How the Tractor Cut My Cost”

“Saving Effectuated in One Year Almost Paid for My Tractor”

By FRED R. TAYLOR

EVERY farmer who has ever raised a crop of corn is aware of the fact that it costs as much to grow an acre of corn, when it only yields 20 bushels as when it yields 70 or 80 bushels. Of

course, it will cost more to husk a big yield than it will a smaller crop, but anyone I think would be willing to husk the larger crop when he can raise it.

It, therefore, seems to me that it is up to the farmers of this country to increase their yields wherever

a considerable sum of money, with a very poor prospect of ever being able to get an increased price for them, I finally bought one of the most popular makes of two-plow tractors. I then used this tractor in connection with what horses I had on hand, running horse and tractor-drawn gang plows in the same field. After I had finished my plowing I put the tractor on a tandem disc and harrow to work the ground ahead of the corn planter.

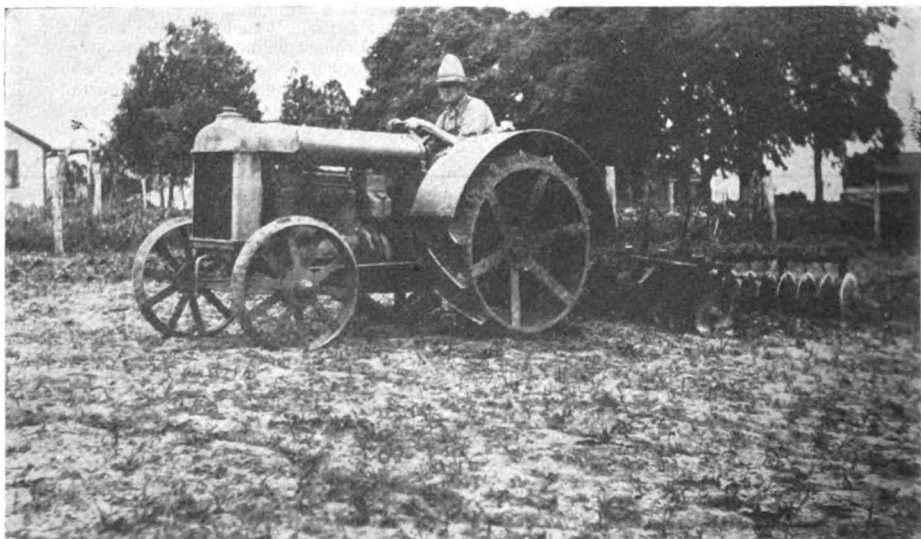
After I had my corn all plowed over the first time we could begin to notice strips in the field in which both plows had been used, where the corn was not growing as well as the balance of the field, but no great amount of attention was paid to it, as we thought when husking time came that there would be no difference, as we knew this field had been yielding well. When husking time came I was not able to help husk the corn in this field, but the men doing the work were not slow in saying there was a difference that could be told very plainly. Upon investigating it proved to be the same strips that had made the poorest growth during the summer that were making the poorest



Fred R. Taylor and the Tractor That Cut His Farming Costs.

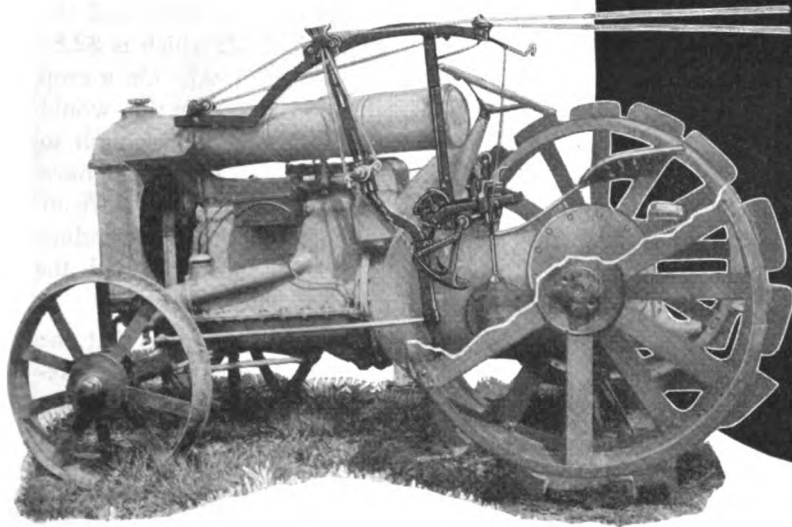
it is possible, and at the same time cut production costs at every possible point.

During the year of 1919 I farmed with horses and horse-drawn implements, but during the backward and wet spring of 1920 I had the misfortune, or that is what I thought at the time it was, to have some of my best horses go wrong. This, of course, made it necessary for me to hunt up more horses or some other way of doing my plowing and discing. After looking around and finding out that four good horses was going to cost me



Mr. Taylor and His Tractor with a Disc Attached Ready to Begin the Day's Operations in the Field.

Rowe Line Drive



Makes It Easy to Farm with a Fordson

Handles Tractor Like a Team

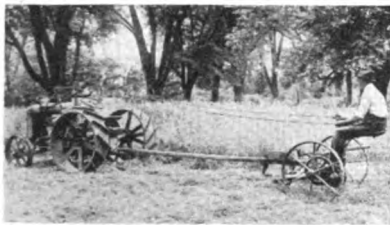
Hitch your Fordson on to anything you want to pull. Drive it just as you would drive a team. Ride the seat of the implement just as you have always done. Use the two lines just as you would in driving horses. This marvelous mechanical driver can be put on any Fordson in a few minutes. It will do everything that an extra man could do riding right on the seat of the tractor. It saves its own cost in a few days.



Ride the Binder—Save a Man.

Two Lines Do All

The two lines control all gear shifts, including reverse, operate the clutch, accelerate and retard the gas, and steer the tractor as easily as your two lines drive a team. To stop you pull hard on both lines. To slow down you pull gently. To speed up you slap lines up and down just as you do on the backs of your horses. To turn right or left you pull on only one of the lines. You learn to drive perfectly in 15 minutes. You can't strip gears or damage tractor. Everything is done automatically.



Easier than driving a team.



Follow the rows easily with a Rowe Line Drive.

30 Days' Free Trial

If you have a Fordson Tractor, you will double its usefulness and greatly lower your labor costs by equipping with a Rowe Line Drive. No holes to bore. No changes in tractor. Don't even remove seat. Unsnap lines at any time and ride tractor if desired. We give 30 days' Free Trial on your own farm. Pay if pleased. Write for Free Folder Today.

ONLY
\$19⁷⁵
to
\$30.

Rowe Mfg. Co.

311 Liberty St. - - Galesburg, Ill.



Handles just like a Team in all Farm Work.



You can plant in straighter rows with a Rowe Line Drive



Harrow and Roll at one Operation.

yields. As to the reason for this difference, the only thing I know of is that the poorer yielding parts of the field was plowed with the horse-drawn plow. This plow was equipped with a harrow attachment that only harrowed about one-half of the ground twice, as the attachment was not wide enough to cover the width of four furrows, while the tractor-drawn plow pulled a 5-foot section of a harrow, which did cover all of the ground twice. I was also able to plow a little deeper with the tractor plow than with the horses. The soil in this field was all the same type and what manure had been put on this field had been scattered by driving opposite of the way the rows of corn ran. I am, therefore, inclined to give the tractor credit for the difference in the yield of this field, as both plows were equipped with the same kind of moldboards.

Now let us take up the cost of preparing an acre

The 1921 figures for preparing an acre of ground are as follows:

Operation—	Hours, Man Labor	Hours, Tractor Labor
Discing stalks .....	.46	.46
Plowing and double harrowing.....	1.45	1.45
Double disc and single harrow.....	.51	.51
Totals	2.42	2.42

We now find our man labor cost us \$0.63 and the tractor labor \$1.84, or a total of \$2.47, which is \$2.83 less than the cost where horses were used. On a crop of 82 acres of corn which I had this year this would make a difference of \$232.06, or one-half enough to buy a new tractor like the one I am using and have money left, not counting the saving on the cost of putting in my oats crop or silo filling, feed grinding and countless other odd jobs I am able to do with the tractor but unable to do with horses.

You will also note that the ground prepared with the tractor received one more discing and two more harrowings than the ground worked with the horses, which I think is one of the reasons for my increased yields since I have been using the tractor.

Another saving is that I have been able to handle as much land in crop as when I hired one man all of the time, while now I do not need a man until I am ready for corn plowing, and this item figured at the prevailing wages in this vicinity during 1921 would amount to \$100.

Now we will take up the

costs of putting in an acre of oats for the same years.

The 1919 figures on an acre of oats are:

Operation—	Hours, Man Labor	Hours, Horse Labor
Double discing	1.34	5.5
Single harrowing .....	.28	1.12
Totals	1.62	6.62

A cost of \$0.42 for man labor and \$0.79 for horse labor, or a total cost of \$1.21 when the horses were used.

The 1921 figures are:

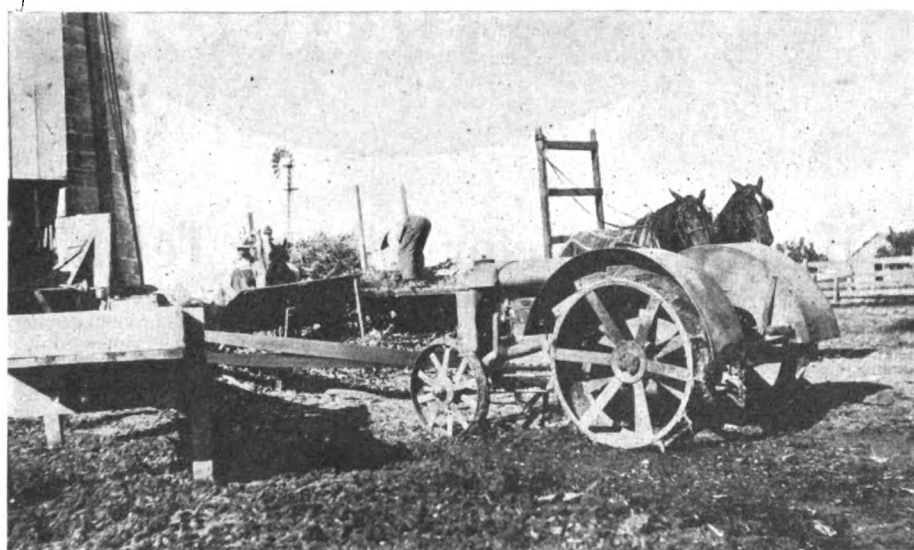
Operation—	Hours, Man Labor	Hours, Tractor Labor
Double disc and single harrowing.....	.50	.50

A cost of \$0.13 for man labor and \$0.38 for tractor labor, or a total cost of \$0.51 per acre.

The amounts that I consider that I have saved by using the tractor are as follows:

82 acres of corn ground prepared for planting @ \$2.83..	\$232.06
38 acres of oats put in @ \$0.70.....	26.60
Silo filling, 94 tons @ \$0.25.....	23.54
Two and one-half months extra labor not needed @ \$40.00	100.00
A total saving of.....	\$382.20

This is only \$40 less than a new tractor would cost me today.



Mr. Taylor Used His Tractor for Silo Filling and Says That His Accounts Show a Saving of \$23.54 a Day by Owning His Own Equipment.

of ground ready for the corn planter during the year of 1919 when horses were used and for the year 1921 when the tractor was used for this work, charging the same prices for man labor in both cases, 26 cents per hour, and the cost of horse labor and tractor both on the 1921 prices. I found that it cost 12 cents an hour for horse labor and 76 cents an hour for tractor labor.

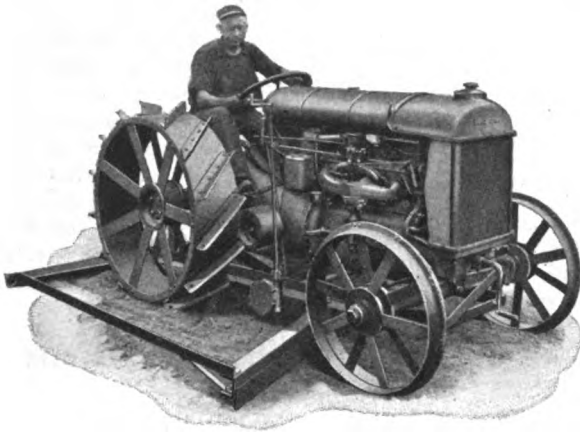
The 1919 figures for preparing one acre of ground are as follows:

Operation—	Hours, Man Labor	Hours, Horse Labor
Discing stalks	2.9	11.6
Plowing (five-horse gang).....	2.5	12.5
Single discing .....	.75	3.
Single harrowing .....	.6	2.4
Totals	6.75	29.5

We therefore find that our man labor cost us \$1.76 and the horse labor \$3.54, or a total of \$5.30.

The labor for plowing on this field was high, but it was unusually hot for the time of year when this plowing was done, which necessitated letting the horses rest more than usual.

THE WEHR ROAD MAINTAINER



THE WEHR Road Maintainer and the Fordson tractor is the real solution of good roads at low cost. Designed specially for the Fordson tractor, so that the tractor and maintainer combined make a one-man outfit, low in cost and upkeep, yet twice as efficient as the ordinary road patrol.

The Wehr Maintainer and Fordson Tractor make an ideal road patrol — a machine that will maintain the highway in better condition at lower cost than any other outfit or method on the market.

The operator has complete control of the cutting blade which he can raise or lower at will. Tractor turns in the same radius with maintainer as without. Cutting and smoothing blade cut and level an 8-foot strip of road at regular tractor speed.

Easy to attach. Just back the Fordson into the Maintainer, connect two bolts to the drawbar and one to the radius rod bolt. No holes to drill. Only takes a few minutes and the machine is ready for work.

Every county commission is interested in this machine. Fordson dealers are making quick sales and good profits selling the Wehr Maintainer.

WEHR *Throttling* GOVERNOR

The Wehr Throttling Governor is a real engineering achievement. This governor is the most effective yet produced. It will effect a surprising fuel economy and maintain a steady flow of power from the motor, regardless of load variation. It is of the fly-ball type, operating on the same principle as the governor on a steam engine. It is designed especially for the Fordson Tractor.

This governor also acts as a belt tightener. The spring tension indicated by the arrow tightens the belt and prevents slippage.

Installed in 15 Minutes

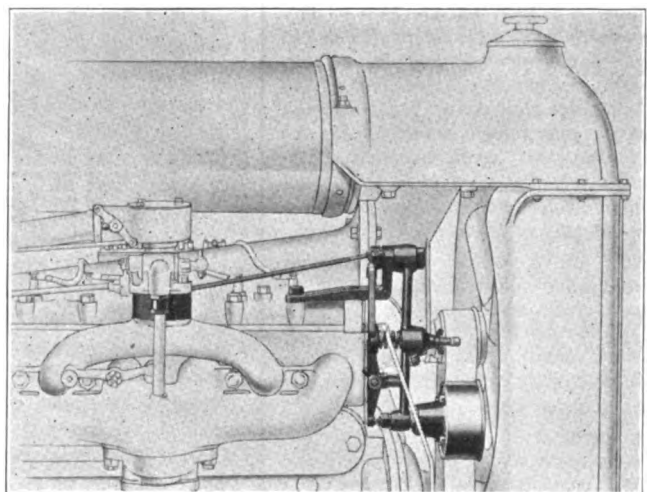
Does not require a mechanic or an expert. No holes to drill, only two bolts are required to connect it. It is not even necessary to retune the motor, change the location of the timer, or disturb the butterfly valve.

Oversized Roller Bearings

There are no gears to wear out. All wearing parts run in an oil bath and are enclosed in a dust casing. The roller bearings are 50% oversized, eliminating practically all friction or wear.

Big Profits for Dealers

At the low price of \$16.50, the Wehr Throttling Governor is the best selling Fordson proposition that has ever been offered. Write or wire your nearest distributor for dealer discounts.



WEHR COMPANY 563 THIRTIETH STREET MILWAUKEE, WISCONSIN

ALLOY STEEL ON THE FARM

CHAPTER III

If important parts of farm implements were built of ALLOY STEEL, as Ford cars are, you would gain the following advantages:—

1. Less freight from the factory.
2. Less horsepower to operate.
3. Less repair expense.
4. Less costly delays.
5. Longer working life.
6. Less cost per day, week, month, or year of use.

Because the proper addition of such alloys as nickel, chrome, vanadium or molybdenum makes the steel so much stronger and tougher that the parts can be made much lighter in weight, and wear longer.

Whether horses or tractors are used for power it *costs money* to pull dead weight, and even 100 lbs. saved in the weight of an implement by using alloy steel in *some* of its parts means a big power-saving during the life of the machine.

More important still, lighter weight means faster work—more work per day.

And the saving in repair bills and working time may easily be the biggest item of all.

In Automobiles and Trucks

SPRINGS, for instance. Most cars still have springs made from ordinary "carbon" steel. This is why car owners *expect* their springs to give way, just as they have been taught to expect patent leather to crack. Not that Alloy Steel Springs can be guaranteed never to break; but, that this steel, properly heat-treated, makes springs that last longer—much longer.

The same is true of gears, pinions, shafts and a lot of other parts of automobiles and trucks subjected to shock, stress and vibration. If made of Alloy Steel, intelligently heat-treated, their average life of usefulness is very much lengthened.

Talk these matters over with your implement and automobile dealers—especially when you have to pay for repair parts, and tell them to write the manufacturers that everybody would be happier if they used Interstate Alloy Steels in building their machines.

Interstate Iron & Steel Co.
104 S. Michigan Ave. CHICAGO

FORD MOTOR TROUBLE ADVICE

By F. M. Service

Pistons Leak Oil

TO THE EXPERT:

Last fall I had a little hard luck with my Ford car. The oil pipe got clogged with dirt and I ruined the three main bearings. The car was three and one-half years old and the pistons were getting loose in the block, so I decided to have a new block and new pistons and rings put in. Now I have trouble with oil leaking past the pistons, fouling the plugs. It did that right after the work was done. The car has run 1,747 miles since, and still leaks oil.

The work was all done by an expert auto mechanic. Would it pay to put leak-proof rings in or would it not? Could you tell me why it leaks oil past the pistons?—FRED FICK, Manhattan, Ill.

Answer—The oil pumping trouble you are having is not caused by anything being wrong with the block, but is due to the fit of the pistons or rings, or both, and the only way to eliminate it is to do one of three things.

First. Remove the pistons now in the motor and lap in new oversize ones. These can be obtained .0025 of an inch larger than the standard size of the block. They should be lapped in with emery and oil, the emery of the finest grade obtainable, or ordinary valve grinding paste can be used. This is mixed to a thin paste with oil and applied to the surface of the piston to be lapped, which is then inserted in the cylinder and worked up and down and around until it passes clear thru the cylinder. The emery must then be absolutely removed from the piston and cylinder walls, gasoline being the best thing to use to clean them. This method of fitting pistons is the best known to obtain a perfect fit.

Second. If the old pistons seem to fit good remove the rings and fit new oversize ones, which can be had .031 of an inch larger than standard. File the gap until the rings have not more than .005 of an inch clearance when tried in the cylinder they are to go in. Always be sure to have the rings placed in the groove of the pistons with the word "Ford," which is stamped on one edge, up. As the ring surface is slightly tapered and if put in the other way will cause the piston to pump oil badly, no matter how well it may fit.

Third. The last method is to drill or "bleed" the pistons. This is done by filing a 1/8-inch surface at a 45-degree angle to side of the piston, just at the top of the bottom piston ring groove, and drilling 1/8-inch holes every inch

around the piston. These holes are drilled at a 45-degree angle to the side of the piston or at right angles to the surface filed at the top ring groove. This permits the excess oil to gather and flow back in the crankcase thru the holes in the piston on each up stroke. Often after the best care has been taken in fitting up a motor by an expert repair man a motor will pump oil, and the last method explained above will invariably eliminate the trouble.—F. M. SERVICE.



Needs New Pistons

TO THE EXPERT:

I have a 1921 Ford runabout. The front cylinder has always pumped oil. I got one step cut, quick seating oil groove ring and two regular step cut rings and put them in and tried them. It was worse than it was before, so I got two more step cut quick seating oil groove rings and put all three oil rings in and they don't seem to do any better.

Can you suggest something that will do the work? I use medium oil and could not run it with only enough in it to run out of the lower cock. The old rings look as tho not more than half the width of them touched the cylinder wall.—H. B. DANFORD, Whigville, Ohio.

Answer—It is characteristic of a Ford motor to pump oil in the front cylinder first if there is any oil pumping, because the oil has a chance to pocket more at this end of the motor and the splash is considerably larger there than in any other cylinder. Consequently the piston and rings must fit properly to eliminate this trouble. In your case it would appear that the piston is at fault, and we would recommend that you lap in an oversize piston.

If the pistons in your car have never been changed they are of the standard 3 3/4-inch size, and you can obtain one .0025 of an inch larger. There should be smeared on its surface a mixture of very fine emery or valve grinding compound and oil, and worked up and down and around in the cylinder until it will pass clear thru. To hold the piston while doing this, fit in the connecting rod and pass a short round stick thru the crankshaft end to turn it by. Always work the head of the piston thru the cylinder from the top down. After it will pass thru, clean it and the cylinder wall with gasoline, to remove all the emery. This must be very carefully done, for if any emery is left it will speedily cut the cylinder when the motor is started.

If this work is done carefully you should not have any trouble with oil pumping, even if the old rings are used, as the fact that they only wear one-half the way down on their surface shows that they are not worn out because the surface of the ring is tapered and there has not been enough wear to even take off this taper which is only .001 of an inch.

If you decide that you do not care to go to the expense of installing a new piston, try drilling the one you now have in the front cylinder. The method of doing this has often been described in this department.—F. M. SERVICE.



Fordson on Hills

TO THE EXPERT:

Is there any danger of burning out the front bearing of a Fordson tractor when going up a steep hill or letting the tractor bury itself until the transmission rests on the ground with the front end up?

Do the Ford people make an oversize back main bearing cap for the Fordson tractor to take up the end play in the crank shaft?

Would you please give me a sketch explaining how to go about overhauling the transmission?—HUGH HASNESS, North Lima, Ohio.

Answer—There is no danger of your burning out the front main bearing of your Fordson by going up a steep hill or by the tractor burying the rear wheels, as even if you were to put the tractor at such an angle that the oil would not flow by gravity thru the oil line, the spash in the crank case would furnish sufficient lubrication for the front bearing for the brief time the tractor would be in that position.

The Ford Motor Company makes a bearing to remove the end play in the crank shaft. It is part No. 2565, rear main bearing cap.

Regarding the overhauling of the Fordson transmission there was an article in the March and April issues on this subject.—F. M. SERVICE.



Couldn't Be Improved

IT keeps me busy to read the instructive articles in FARM MECHANICS. The magazine contains information about mechanics that is not found in other farm papers. I think the "Motor Trouble Advice" and "Fords and Fordsons" departments are fine.

CLAIR APER, Newton Falls, Ohio.



SPRING is the time to set out berry bushes and shrubs to beautify the home grounds.

Is There Any Other But M-C-F Fenders That Will Do This?



To fully demonstrate the strength of M-C-F Fenders for the Fordson over others we are illustrating an actual case of putting their strength to a test. You see the rear end of the Fordson lifted up by using a jack and a 2x8 under the rear end of the platform. M-C-F Fenders hold because the very best of material and workmanship is put in them. We have yet to hear of a Power Farmer or Fordson Dealer with words other than praise for them.

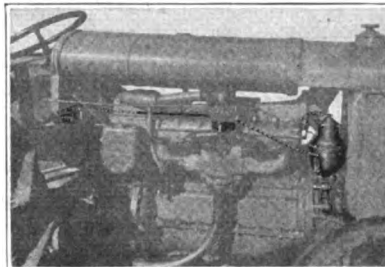
Send for literature and prices

Michigan Crown Fender Company
Dept. FF YPSILANTI, MICHIGAN

Control Fordson Speed

with

TACO FLY BALL GOVERNOR



FARMERS! Reduced Prices on TACO Governors

Get in touch with our dealers or write us direct for new prices.

The Taco is the *leading* Governor for the Fordson. More than 35,000 in use today. Daily the number grows—and nothing proves merit like success! Put the TACO on your Fordson. It automatically controls the speed in a rapid, precise manner. You regulate the speed right from tractor seat without choking down motor power. You make your Fordson more obedient. Saves time and money.

THE TACO-MEYERS MOWER

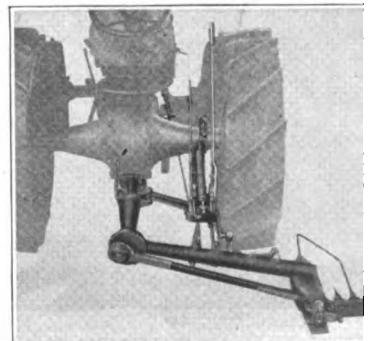
A Proven Mower for the Fordson

Attaches to the business end of the tractor—the part designed to carry loads. A sickle bar located to permit cutting a square corner. Has as much clearance as the tractor. Equipped with a safety device that stops the tractor when an obstacle is encountered.

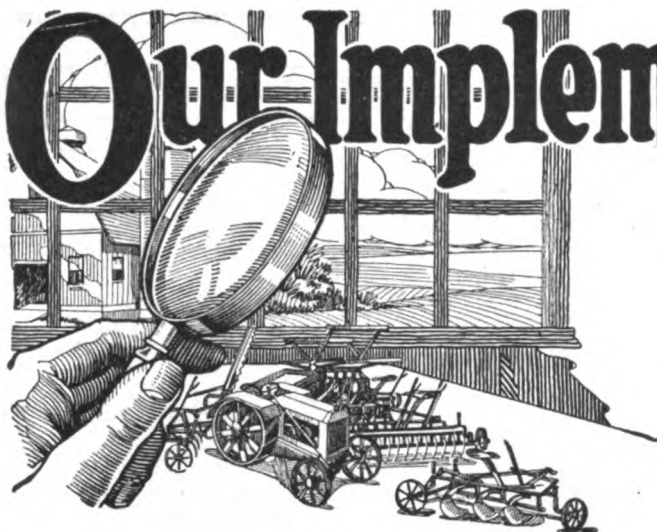
SPECIAL TO DEALERS!

Let us put a Taco-Meyers Mower on your floor until the cutting season, begins, without you investing a cent! This is our open offer to demonstrate our confidence in the merit and selling qualities of the Taco-Meyers Mower. Write today for full particulars.

The Tractor Appliance Co.
211 Monroe St. New Holstein, Wis.



Our Implement Inspector



HE finds much new and worth-while farm equipment offered to increase efficiency and cut down labor.

EDITOR'S NOTE: Farm Mechanics does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address Farm Mechanics Information Exchange, 1827 Prairie Ave., Chicago.

Wind Generates Electricity

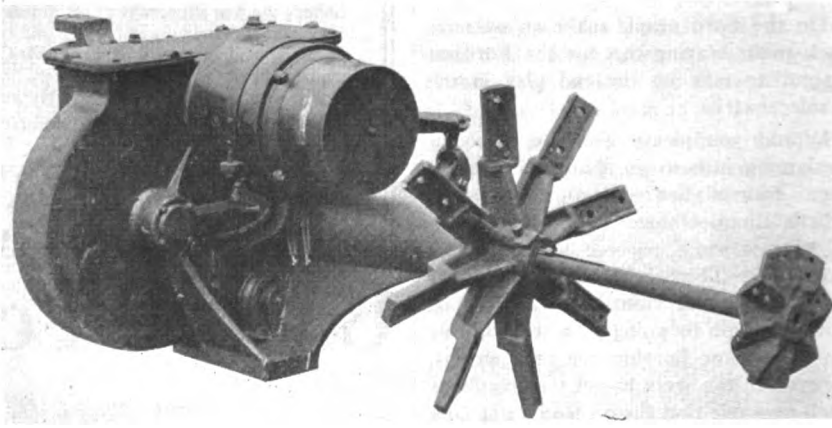
FOR more than twelve centuries man has used wind power in various ways—thru the windmill for water pumping and by sails to propel ships. However, during the last few years this same power has been put to work generating electricity for use in isolated places, especially on farms where electricity is not available.

Shown in one of the accompanying illustrations is a wind power electric generating outfit installed on a farm, while the second illustration shows the generating mechanism with the gear case cover removed. This windmill generates electricity when conditions are favorable and stores it for use as needed. The wind wheel is 14 feet in diameter and is set on a tower 50 feet high. The outfit includes the wind wheel, generator, switchboard, battery and tower. The wheel develops as high as three horsepower in a 30 miles per hour wind.

From the generator the current is carried thru a collector brush to a panel board and storage batteries set in a house convenient to the tower. The

panel has an automatic device that cuts in as soon as the wind is fast enough to begin charging, which is six miles an hour. The batteries are the reservoir

which is sufficient to light the average farm for eleven days without wind. The tower can be erected at any distance from the house up to 600 feet, which



The Generating Apparatus That Is Mounted on the Windmill.

into which the current is "pumped" and from which the current may be drawn.

The outfit charges in winds ranging from six to thirty miles an hour. The battery capacity is 240 ampere hours,

permits the selection of a location on higher ground.



Power Garden Cultivator

A MACHINE that handles all the implements needed in the garden and will do the work quickly and with less labor is shown in the illustration. This power cultivator is a well-built tractor equipped with a one-horsepower motor, of the air-cooled type. The single cylinder of the engine has a 2½-inch bore and stroke and is a four-cycle. The ignition is furnished by a magneto built into the flywheel of the motor. The machine weighs 235 pounds and has a speed of a little more than two miles an hour.

Implements that are designed to be used with this machine are 4-inch single plow; 4-inch double moldboard plow; rakes, hoes, cultivators of all types, discs and covering plows and row crop harvesters.

The tractor is of the two-wheel type with trailer wheels heavy enough to hold the implements in the ground and



Electricity Generated by the Windmill on the Hill Lights These Farm Buildings as Well as the Farm Home.

at the same time light enough so that they may be raised easily. There also is a belt pulley so that the engine can be used to operate power machines that come within its power.

This machine is one of the oldest on



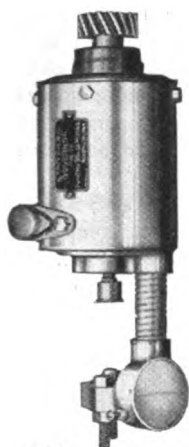
Garden Tractor with Plow Attached

the market and has given excellent satisfaction to those who own them.



Fordson Governor

THE governor for the Fordson tractor, shown in the accompanying illustration, is so designed that the slightest variation in the load will cause it to open or close the throttle as required. The action is, of course, wholly auto-



This Governor Opens and Closes the Tractor Throttle as the Load Increases or Decreases.

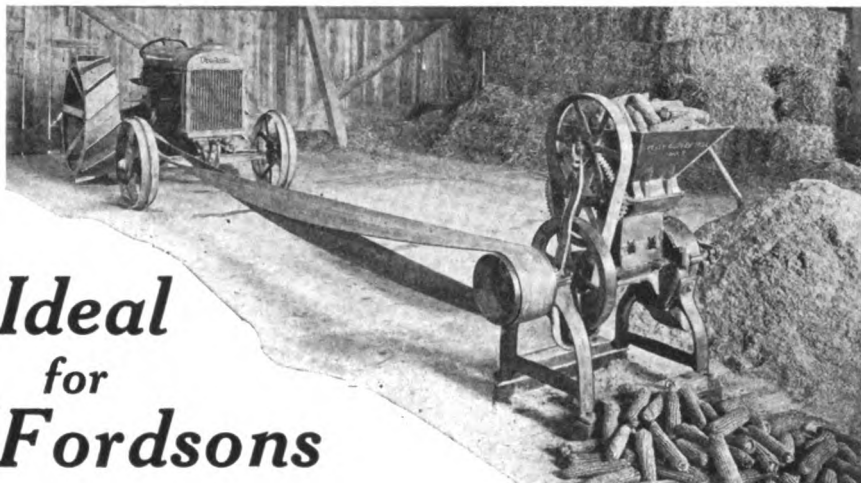
matic as well as instant and positive. Every tractor owner appreciates the fact that in no field are the conditions of the earth constant. The pull varies many times in every furrow. In one field may be found clover sod, gumbo, sand, loam and clayland. In many fields it is much worse—that is, the difference in soil values and consistency are much more pronounced.

All of these differences affect the pull of the tractor. It is the business of the governor to smooth out such difficulties.

In building the governor the manufacturers have refrained from changing any of the original tractor parts, especially the throttle and carburetor parts. This produced a governor of exceptional efficiency without in any way lessening the effectiveness of the tractor in other operations. They bore in mind, too, that to be a really effective governor it must work both ways—open the throttle when the load is increased and close it when the load is decreased.

KELLY-DUPLEX

Combination Cutter and Grinding Mill



Ideal for Fordsons

Kelly-Duplex Mills work perfectly with Fordson power. The parts are perfectly machined and bearings are babbitt lined for smooth running and minimum friction. It's the Kelly-Duplex double grinding surface—the shaft without end thrust—the small diameter grinding burrs, set close to the shaft—it's these points that have made Kelly-Duplex Mills do twice the work with less power than other mills their size.

Grinds Ear Corn and Cob with or without Husks, all kinds of Grain, separately or mixed, Alfalfa, Corn Fodder, Sheaf Oats, Pea Vine Hay, Soy Beans with vines, Kaffir Corn and Milo Maize in the head, with a portion or all of the stalk, either alone or mixed in varied proportions. Sizes and types to suit any power.

Write for illustrated booklet. Mention "Farm Mechanics." (Poultry raisers ask for special circular on poultry feed milling outfit.)

THE DUPLEX MILL & MANUFACTURING CO.
Box 342 SPRINGFIELD, OHIO

Run 30 years and still good

FORD DEALERS

The popularity of Kelly-Duplex Mills is rapidly growing among Fordson owners and if you are not already familiar with this mill, write us for complete information and territory.

Kenosha, Wis. Dec. 21, 1921.
The Duplex Mill & Mfg. Co.,
Springfield, Ohio.

Gentlemen: I wish you would send me a set of burrs for my No. 3 Kelly-Duplex Mill. We have used this mill for 30 years for grinding cob meal and all kinds of grain, such as oats and barley and wheat. We have found it very satisfactory through all these years and it is a good mill yet.

Yours truly,
DOWSE BROS.

SPRAYING BEATS DIPPING!

—for Cattle, Sheep and Hogs

**Safer
Surer
Quicker
Cheaper**

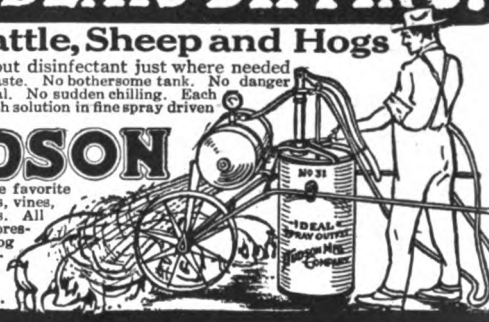
(23)

Ideal Sprayer shown here is the favorite farm outfit for use with stock, trees, vines, white-washing, etc. Capacity 15 gallons. All material easily moved. Has boiler iron pressure tank with welded seams. Free catalog shows this and 30 other Hudson Sprayer Outfits. Write today.

HUDSON MFG. CO.
Dept. 4023 Minneapolis, Minn.

Allows you to put disinfectant just where needed most—without waste. No bothersome tank. No danger of injuring animal. No sudden chilling. Each animal gets fresh solution in fine spray driven into the coat.

HUDSON



*If anything was ever
simply built it surely
is the new, refined*

Phelps

Power and Light

No Switchboard

to continually adjust. New Phelps Controller is guaranteed to automatically start, run and stop the Phelps for the entire life of the plant.

No Carburetor

to daily tinker with. Phelps Vaporator burns all kinds of fuel economically.

Oversize Batteries

eliminate all battery worries; protected to you by our 5 year replacement guarantee.

2 Electric h. p.

to drive individual motors in house, out-buildings and at the well.

3½ Belted h. p.

to pull a line shaft loaded with a dozen chores.

75 Lamp Capacity

from the generator without the aid of the batteries.

Does Every Chore

Pumps water, grinds feed, milks cows, churns, separates, washes, irons, sweeps—does every chore on your farm quicker, better, cheaper than you now do by hand.

Priced Right

Costs no more than plants that do less than half the work and give less than half the light.

2 Big Books

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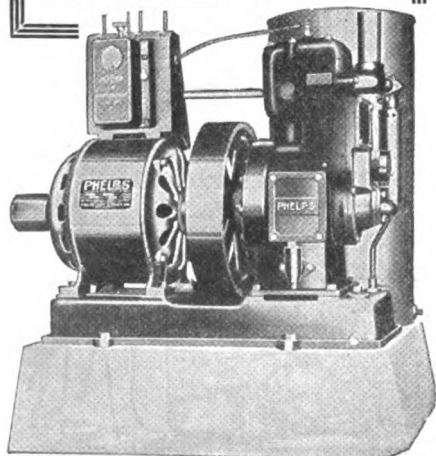
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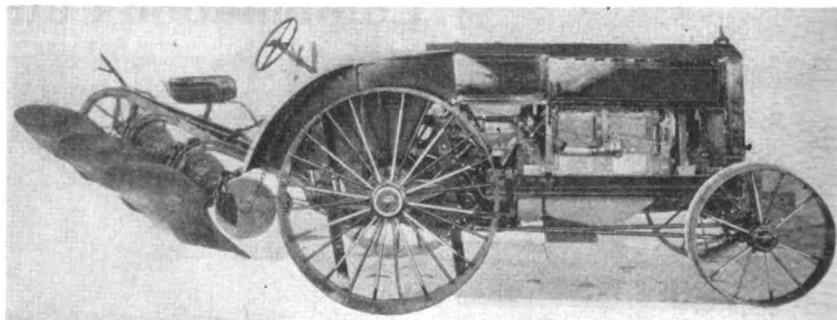
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WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

Three-Bottom Motor Plow

DESIGNED especially for the operation of a three-bottom plow, the tractor shown in the accompanying illustration has some unique and desirable features. One of these is that it is



Tractor Designed to Operate on Two or Three-Bottom Plow, as Well as All Other Power Work.

able to raise the plows by power when going forward, or backward, or while it is standing still. This feature does away with plowing fence corners with hand plow and horses, to say nothing of the tramping down of freshly plowed ground. The raising of the plows is accomplished by a power lift, operated by the engine and controlled by a lever at the driver's hand.

The tractor itself is a four-wheel machine, with the drive from the two rear wheels. The engine is a four-cylinder, vertical cast-in-block, having a 4½-inch stroke and 5¼-inch bore, and makes 1,200 revolutions a minute. The tractor has a rating of 12 horsepower at the drawbar and 25 on the belt pulley, the latter being sufficient to operate a 24 by 42-inch threshing separator.

By special design the power take-off

to the wheels is transmitted thru a spring arm to the rim of the wheels, thereby taking the shock from the frame and motor. The service pulley is 6½ inches above the center line of the motor, which permits its use for all belt jobs while standing level on the ground. The re-

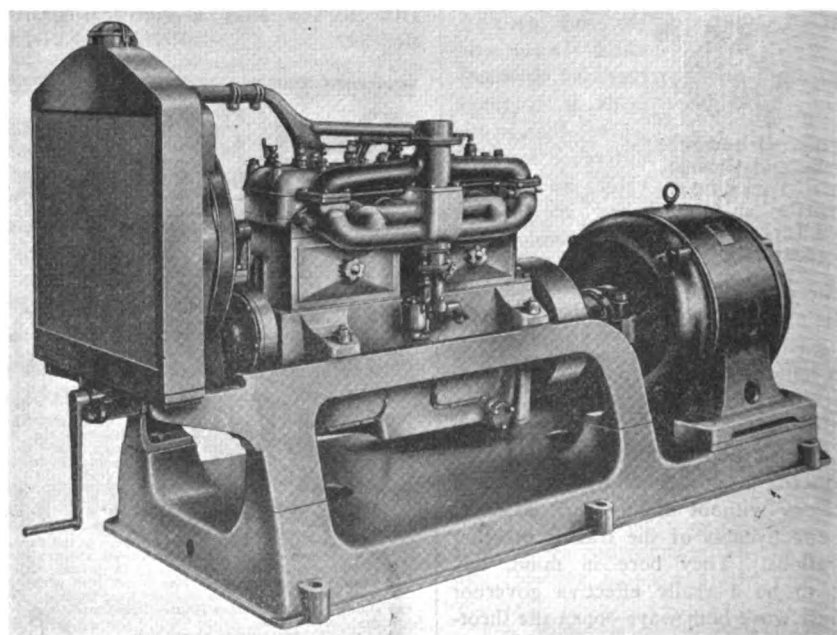
moval of two pins detaches the plow and makes the tractor ready for any drawbar or belt-pulley job.



30 K. W. Light Plant

THE utility of the larger size individual electric light plants for giving service to small villages or groups of buildings has caused manufacturers to pay considerable attention to this field during the last year or so. These plants are designed to furnish sufficient electricity to light 30 or 40 or more homes and business places and are operated by gasoline engines of the more powerful types.

Shown in the illustration is a 45-horsepower gasoline engine direct connected to a 30-kilowatt generator. It will be noted that the brackets for the motor



Thirty-Kilowatt Light and Power Plant for Groups of Buildings or Villages.

are so made that easy access is had to the handhole covers in the oil pan, as well as to the oil strainer, pump, etc., which means that the operator will find it easy to keep the engine in good condition. This outfit, as well as one or double the capacity, are furnished complete with switchboards.



New Wheat Land Lister

THE rapid growth of the lister method of preparing wheat ground has resulted in the placing on the market a new three-row wheatland tractor lister. This machine has several distinct advantages. It is a two-wheel lister and when the bottoms are raised they are carried off the ground by holding the front end of the machine down. This means that the hitch must be rigid when the bottoms are out of the ground. An exclusive feature provides for up-and-down motion when the bottoms are lowered and the lister is thus permitted to follow the contour of the ground, insuring uniform depth and a level furrow bottom.

Each bottom is equipped with a pair of runners which perform the same function as the landside on a regular plow bottom, that is they steady the bottom and govern the suction. These runners are equipped with replaceable soles.

The bottoms are adjustable for different widths of rows between three feet and three feet eight inches. If conditions should require it, the center bottom can be removed and the outside bottoms set in, converting the lister into a two-row machine. When the outside bottoms are set in, the wheels go in with them.

Two types of lister drill attachments can be furnished, one for planting corn and grain-sorghum seed and the other for planting cotton, corn or grain-sorghum.

The method of preparing wheat ground with the lister is much more economical than the old way. In fact,

MYERS WONDERFUL SEWING AWL



Ask For This FREE BOOK

Give useful information and tables, describes all kinds of saws for wood and metal cutting. Send your address to E. C. ATKINS & CO., Inc. Dept. T Indianapolis



Bring the City to Your Farm

by installing a **MATTHEWS Full Automatic** farm light and power plant. You have to give the **MATTHEWS** water and gas and oil—but otherwise it takes care of itself. Press a button anywhere and you get current from the battery at once. When the battery needs recharging the engine starts automatically. When the battery is recharged the engine stops automatically. The **MATTHEWS Full Automatic** control protects the battery from overcharging or from being run down, at all times. It insures you current whenever you need it.

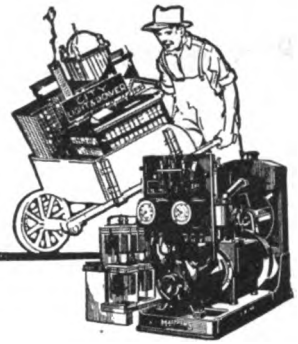
Buy the plant that eliminates ALL drudgery

You buy an electric plant to save you from drudgery. Then buy the plant that saves you the drudgery of taking care of the plant itself. Buy the only plant on the market that is really full automatic. Buy the **MATTHEWS**!

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Full Automatic

ELECTRIC LIGHT AND POWER

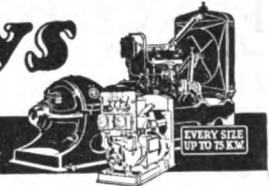


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No matter what size you need, we have it—from 15 lights all the way up to 75 kilowatts. Prices, \$295 and up. If you need an electric light plant, you need a **MATTHEWS**.

Write for information today.

MATTHEWS ENGINEERING COMPANY
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Made of hardened steel, $\frac{1}{4}$ inch thick with skirt extending to bottom of gear case.

Steel protected lock cylinder.

A turn of the key—pull up the wheel and take out the key. Security Auto Lock has the approval of Underwriters' Laboratories. Absolutely Thief Proof.



Security Lock, Steering Wheel with Aluminum Spider and 17-inch Corrugated Walnut Rim—
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Security Auto Lock can be attached in five minutes. There's an attractive proposition here for you—ask us about it. We'll send you a lock on approval.



Security Cap Lock

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SECURITY AUTO LOCK CO.

410 North Paulina Street

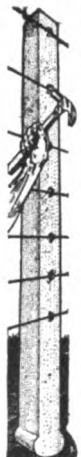
CHICAGO, ILLINOIS

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The Original Loose Wheel Lock for Fords



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The Only **CONCRETE POST** in the world into which you can drive the staples.



It is the strongest, least expensive and best looking post ever made. This post will not burn, decay or split. Beautify and protect your farm, club, or country home by Permanent posts.

The wise grower or breeder protects his crop and valuable animals by good fences.

We will furnish posts or rent mold equipment with complete instructions to make them, by the year. They are inexpensive and easily made.

Agents desired

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MYERS HAY UNLOADING TOOLS



A GOOD Hay or Grain Unloading Outfit saves the cost of one to three men each day of harvest. Myers Hay Tools have been THE STANDARD FOR 50 YEARS. Sturdy construction, patented features, low price, make them the biggest-value made. Also a complete line of Pumps and Door Hangers. See your dealer or write us for booklets. (16)

THE F. E. MYERS & BRO. CO.
25 Church St., Ashland, Ohio

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

the three-row lister will cover the same acreage in one-third of the time required to plow it. For wheat ground the lister should be used as soon after harvest as possible in order to get the ground in shape to retain the small amount of rainfall which usually comes at that time of the year in those sections where listing is practiced. From four to six weeks after the lister is used it is customary to go over the ground with disk ridge busters, thoroly breaking up the ridges left by the lister. This leaves the ground a little rough, and if the soil is likely to blow, it should be left in that condition, as it will resist blowing to a greater extent. If the soil is not likely to blow, it is well to go over the ground with a light drag harrow, which leaves the seed bed in splendid shape.

It is said for this method of preparing wheat ground that it increases the yield from five to six bushels to the acre and that it is very effective in discouraging the propagation of the Hessian fly.



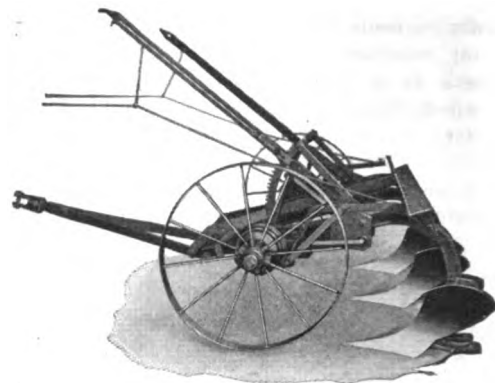
Loader Mounted on Fordson Tractor

USE of the tractor for loading manure has been accomplished by a Nebraska farmer with a mechanical bent and his device has been found so useful that it is now being manufactured in a commercial way. The accompanying illustration shows two tractors fitted with the device.

As will be seen, a frame that supports a scoop or shovel is attached to the front of the tractor. The tractor's power operates it thru a hoist. The operator controls the action of the shovel by levers near the seat.

This attachment has many uses on the farm. The tractor may be run up to the manure pile and the loader used to fill the manure spreader. It is equally practical for loading sand, or any other material that is to be moved.

Contractors and street maintenance men also are using this loading device.



New Wheatland Lister.

This last winter several were in use in an Iowa city for removing snow from the streets.—P. P.



New Rice Stripper

THE invention of a practical rice stripper is an achievement that is expected to have a widespread influence on rice farming. For years there has been a need for a machine that would save the labor and expense incident to the methods of gathering a crop of rice.

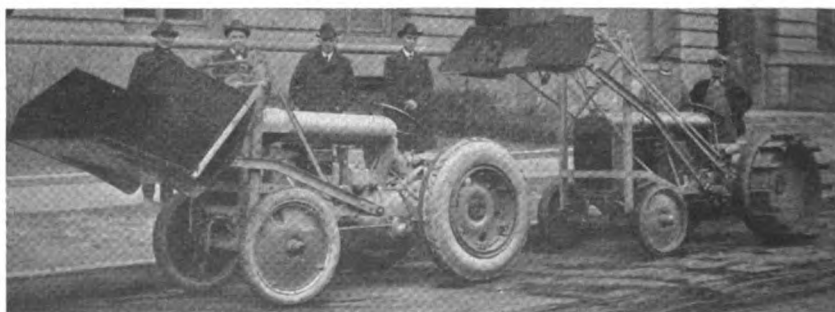
This new machine, shown in the illustration, goes thru the standing field of



New Rice Stripper at Work in the Fields.

rice and as it passes along it takes the grain and leaves the stalk. With this method in operation it is unnecessary to cut the rice. Besides, the straw is left standing in the field, where it can be plowed under and used as a fertilizer for the crop of the following season.

A cylinder with six bars on which are mounted teeth, or fingers, is the principal feature of the new stripper.



Fordson Tractors with Loaders Mounted on the Front. The tractor engine furnishes the power.

These teeth are of the right pattern for stripping the rice. They pass upward and as they do so they comb the rice from the straw and throw it over the cylinder. Here it strikes the hood and drops on down into an elevator trough. The rapidly revolving cylinder creates a strong draft at the front where the teeth pass close to the hood. This current of air holds the grain as the cylinder revolves, and forces it over the cylinder close to the hood, where the lessening air pressure allows the grain to fall directly into the elevator trough. In order to harvest the rice that is down or lodged, the stripper can be tilted forward and downward.

An elevator is provided that carries the grain across to a platform. Here it is emptied into sacks, dropped off in piles and finally picked up and hauled to the granary. With this machine from 20 to 40 per cent of the rice that comes from the stripper is made up of blades, whole heads and part heads which have been pulled off with the rice grain still intact. It is, of course, necessary for this rice to be put thru a cleaning process to get it in proper shape for the market or the granary. The use of this stripper is to the rice industry what the header is to the wheat industry. The work is speeded up immensely, with a remarkable saving of labor and expense.—G. F. P.



Farm Mechanics Fine

I PICKED up a December issue of FARM MECHANICS on a news stand and after reading it I want it to come to me regularly. The magazine is fine—right size, fine paper, plenty of pictures, plain, readable type and a good general make-up. LAWRENCE J. WALSH, Rochester, N. Y.



MORE clover and less timothy will lower the fertilizer bill.



Fruit trees that get no care produce about as much as shade trees.

The Grainger Pumps

Best on the Market

BOILER FEED PUMPS
GENERAL SERVICE PUMPS
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J. J. Reilly Manufacturing Company Incorporated
North Tenth St., Louisville, Kentucky



In the Same Way
that snowshoes keep the trapper from sinking into the deep snow

GRID-IRON-GRIPS

allow the tractor to pass over boggy ground that would be impassable without them because they form a track on which to run.

GRID-IRON-GRIPS convert your Fordson into a crawler type that will increase traction 35% and save fuel. We can furnish complete new wheels with grips for new or old tractors or grips to be mounted on Fordson wheels.

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SMALL FARM TRACTOR

Displaces the horse on the small farm. *Pays for itself* in the saving of time, labor and horse feed. *Makes the hard jobs easy*, "New Way" Air Cooled Motor. Hyatt Roller Bearing Transmission. 13 inches axle clearance.

Plows 7 Inches Deep in Clay Sod

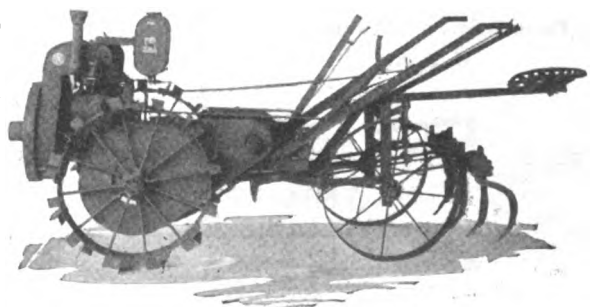
Riding attachment for Harrowing, Dragging, Planting, Cultivating, Mowing, etc. A portable power plant for Sawing Wood, Grinding Feed and doing the many power jobs on the small farm.

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Vulcanizes boots, rubbers, gloves, coats, etc. No gasoline. Each Patch-&-Heat Unit contains its own fuel. A match is all you need.

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2272 Fourth St., Waupun, Wis.
U. S. A.



Feed the Cow What She Needs

By EARLE W. GAGE

FEED the dairy herd according to their individual needs and remove feeding from "Guess so," placing it into the "Know" column.

Economic feeding demands that the cows be fed to full capacity. To do this and to have the best effect on the individual cow requires a thorough knowledge of feeds and cows. Under most circumstances the cow should be fed all the roughage that she will eat up clean, adjusting the grain ration to the milk production. Only when the cow tends to become overfat should the quantity of roughage be restricted.

A grain mixture should be fed in the proportion of 1 pound to each 3 pounds of milk produced daily by the cow except in the case of the cow producing a flow of 40 pounds or more, when the ration can be 1 pound to each $3\frac{1}{2}$ or 4 pounds of milk. An even better rule is 1 pound of grain each day for every pound of butter fat produced during the week by the cow.

The great secret back of the success of feeds for dairy cows, as other farm livestock, is supplying the animals with a ration which is as close a duplicate of the summer pasture ration as possible. The cow must have an ample supply of feed of a palatable nature, and this feed must be supplied at a price which all permit a profit on the feeding operation.

In addition to containing the proper nutriment in the proper proportion, part of the winter ration should be of a succulent nature. It is extremely difficult, if not impossible, to keep cows in full production throughout the winter without some succulent feed. These are the two chief sources of succulent feed for winter use—silage and roots. Of these, silage is in almost universal use by commercial dairymen. While almost any green crop may be used as silage, the heavy yields of such crops as corn and sunflowers, as compared with other crops, and the comparative ease of handling, together with keeping qualities, make these the present leading silage crops.

The best kinds of dry roughage to be fed to the dairy cow, in connection with silage or roots, are leguminous hays, such as alfalfa, red crimson, or alsike clover and soy-bean or cow-pea hay. While corn silage is an excellent feed it is not a balanced one, as it does not contain sufficient protein and mineral matter to meet fully the requirements of the cow. The leguminous hays, in addition to being very palatable, have a tendency to correct this deficiency.

They are also one of the best and cheapest sources of protein. One or more of these hays can be grown on any farm, and in addition to their value for feeding purposes, they improve the soil in which they are grown. Hay from Canada field peas, sown with oats to pre-



Weight the Feed for the Cows and Give Them What They Need.

vent the peas from lodging, also makes an excellent roughage.

Corn stover, coarse hay, etc., also find a good market thru the dairy cow. This class of roughage is low in protein, however, and when it is used the grain ration must be richer in protein.

No positive rule can be laid down as to the quantity of dry roughage that should be fed, but about 6 to 12 pounds a day per cow, in addition to silage, will be found to be satisfactory in most cases. With this quantity of dry roughage the cow will take, according to her size, from 25 to 50 pounds of silage.



Gassing the Gopher

GETTING the best of the gopher in the reclaimed sections of the West is a problem calling for constant vigilance and involving a lot of expense. Various methods of destroying the pest are employed. The most recent and unique method of extermination is reported from the Klamath project in Oregon, where the Ford auto is rendering valiant service. The wide canal bank offers a good highway for a Ford car, and the patrolman on his slow tour of inspection stops at each gopher hole which evidences recent occupancy, and inserts one end of a rubber hose in the hole; the other end is attached to the exhaust pipe. No funeral rites are necessary, as the home becomes the family cemetery. The operation of the outfit is equally successful in other places remote from the canal, where gophers are destructive to young crops.



EVERY dead ear of corn means 900 stalks missing from the field. Test seed.

What a Radio-Telephone Outfit Is

(Continued from page 24)

situated receiving circuits. There the energy which is stored in the field is converted into suitable form for the operation of audible or other types of indicators.

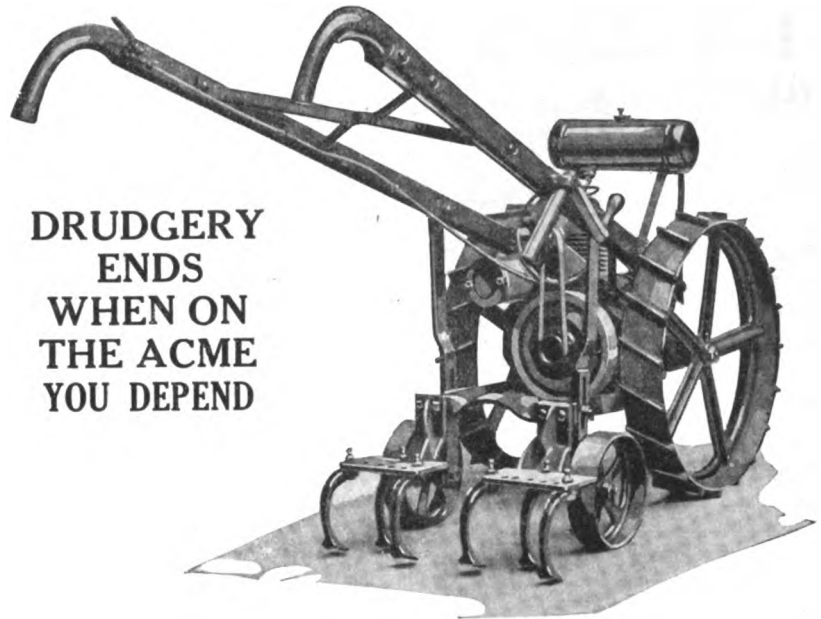
In radio telegraphy the output power of the transmitter is controlled by means of a telegraph key, thus making possible the emission of dot and dash combinations corresponding to characters of the telegraphic code.

In a radio telephone system a modulating device is employed at the transmitting station to vary the output current of the radio generator at frequencies lower than that due to the generator itself. That is to say, the antenna current is made to vary at frequencies and in degrees corresponding to the pitches and intensities of the sound waves produced by the voice of the speaker. Hence upon conversion of the received radio signals there are produced in the receiving telephones electrical currents which are of precisely the same nature as would be produced by communication via wire telephony.

Wherever the information in the previous paragraphs of this article appears somewhat indefinite it is because there is no "hard and fast" rule governing the particular case or subject in question. Much depends upon conditions in the locality where the receiving outfit is to be erected or upon the type of circuit incorporated in the receiving set. Open country is ideal for radio communication and consequently less efficient apparatus may be employed to cover a given distance than is required in large cities. Among other things steel structures and hills containing deposits of metallic ore have an absorbing effect upon the energy radiated from the broadcasting stations. For this reason it is the safest procedure to be conservative in estimating the range of a given receiving set, when considering reception from a radio telephone transmitter of average power. By so doing there can be no discouragement when the set is connected up for actual operation.

Prospective purchasers of radio apparatus should bear the foregoing in mind when buying. Also the novice must not always expect to secure the same results with a given set that many radio salesmen can obtain. They are usually experienced radio operators and sometimes radio engineers. In purchasing radio apparatus, therefore, it is wise to select units manufactured by some one of the well-known concerns who have a reputation for fair dealing. It does not require a technical education to know and appreciate good workmanship. Hence it is good policy to have the dealer open the

ACME-JR POWER CULTIVATOR



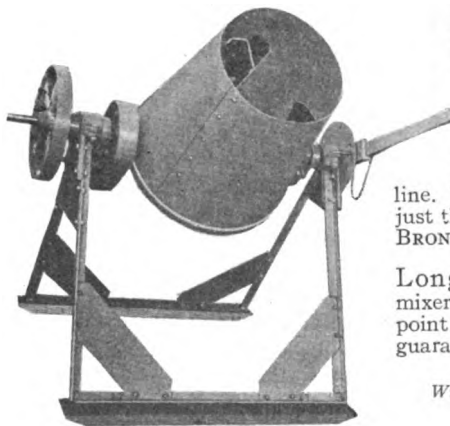
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ENDS
WHEN ON
THE ACME
YOU DEPEND**

RELIABLE, EFFICIENT, SIMPLE AND ECONOMICAL
IT HAS EVERY KIND OF TOOLS AND ATTACHMENTS
The Gardener, Florist and Suburban Estate Owner Needs—The Highest Class Tool of This Type Made

Complete Description Gladly Furnished on Request

THE ACME CULTIVATOR CO., Salem, Ohio

BRONCHO JR. MIXER



No longer is it necessary for the farmer to mix concrete by hand — here is an efficient mixer within the reach of every farmer.

True to Lansing thoroughness in substantial construction the BRONCHO JR. is truly representative of our complete line. With a capacity of 3 cu. ft. and built at just the right height to dump into a wheelbarrow BRONCHO JR. is built for practical farm use.

Long years of constructing concrete mixers have brought BRONCHO JR. to the finest point of efficiency and durability. The mixer is guaranteed for one year.

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*Complete Details
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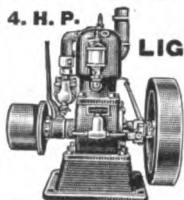


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For Light Jobs

A little wonder—regular Cushman quality. Different, better, fewer moving parts. A real no-trouble engine for pumping, etc. Investigate.

4. H. P.



LIGHT WEIGHT 4 H. P.

For all power jobs up to 5 H. P. Improved Throttling Governor insures very steady running and less gasoline used.

Saves a Team on the Binder

Besides doing all regular jobs, this 4 H. P. may be mounted on rear of binder to save a team, and in a wet season to save the crop. We supply attachments. This engine is a necessity on every farm. Ask for book on Light Weight Engines. If interested in Electric Lighting Plants, write for free book. (12)

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for all makes of light plants. Powerful, long-lasting. Write for money saving prices.

VICTOR STORAGE BATTERY CO., Rock Island, Ill.

cabinet enclosing the receiving units to let you examine how they are constructed and wired. He will be glad to accommodate you and you will thereby gain greater confidence in the set if it gives evidence of high grade construction. Good workmanship and high electrical efficiency generally go hand in hand. Consequently you will not go far wrong by judging the latter from the former, if you have not previously gained knowledge of radio communication.

The pleasure and entertainment one will derive from this hobby or pastime, if not already a radio enthusiast, more than repays for the time and expenditures. Lastly, there will be no reason for surprise if when "listening in" on a radio outfit some evening the President of the United States is heard addressing the people by radio telephone from Washington.



Equipment for Radio- phone Set

TO THE EXPERT:

Please publish in FARM MECHANICS the answer to the following questions:

- (1) What apparatus is used in a radiophone receiving outfit?
- (2) Can this apparatus that is used be made at home? If not, where can it be purchased?
- (3) How is this apparatus connected?
- (4) What should the aerial consist of?
- (5) What size wire should be used in the aerial?
- (6) Is any source of electricity necessary? If so, how much?—ORVILLE RYE, Hanlontown, Iowa.

Answer—(1) The apparatus used in a radio receiving outfit depends entirely upon the character of the outfit desired, the range of the outfit and if to be used with headpieces or with a "loud speaker."

(a) The simplest outfit is the crystal detector set, which will give you a range of probably 25 miles, depending largely upon the weather.

(b) The vacuum tube detector set which will give you much better satisfaction with a range of from 75 to 100 miles, and, which is much more stable than the crystal detector set, not being effected as much by weather conditions.

(c) The two or three stage amplifying set which will give you a range of 150 to 300 miles.

Of the above three receiving sets, the two stage amplifying set will give you the most satisfaction; as, with this set a "loud speaker" can be used, which cannot be done with a crystal detector set.

(2) All of the above apparatus can be made at home, but unless you are a good mechanic and have the time and

The Difference Between Success and Failure

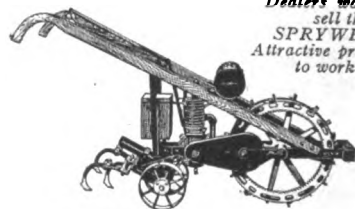
OFTEN lies in the ability to hoe when the crops need it most. The SPRY-WHEEL TRACTOR makes this possible, for no matter how high the plants or how close the rows (*down to 7 inches*) this wonderful little tractor will cultivate better than by hand-hoeing and *five times as fast*.

Thoroughly proven by years of practical use on the market and farm gardens of this country. Low in first cost (only \$150), practically fool-proof, this little wonder tractor may be converted from a power hoe to a power lawn mower in a jiffy. Its uses 'round the place are many, and it does every job within its range without fuss or trouble.

H. C. DODGE, Inc.

36 Alger Street Boston, Mass.

Dealers wanted to sell the
SPRYWHEEL.
Attractive proposition to workers.



125-20

SPRYWHEEL

When You Buy DISCS or Disc Tools

Look for **X** the Stamp of This Mark X-tra Quality Galesburg Discs cut keener, scour cleaner and hold their edge better. Used by almost all the leading Implement Makers of America.

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GALESBURG

Discs, Coultter Blades, Furrow Wheels

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The most efficient Tractor in America

Bates Machine & Tractor Co.

247 Jackson St., JOLIET, ILLINOIS

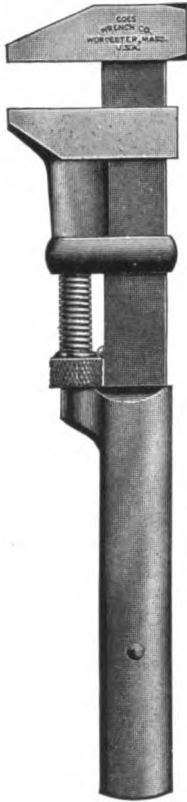
TURBULATOR For FORDS And Other Cars

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ENGINE
CLEAN
INSIDE**

Simple, scientific device that creates actual power out of waste gasoline. Removes and prevents carbon. Improves any car, new or old. Install them yourself in 10 minutes.
10 Day Trial—Guaranteed 100% Efficient
Money back if not satisfactory. Ask your dealer. Write us direct if he can't supply you.

The Turbulator Corporation, Dept. H, 2635 S. Michigan Ave., Chicago

COES WRENCHES



On the modern farm where everything is being done by machinery, you will find that Coes Wrenches are helping to keep each and every machine in first class running order.

Coes Wrenches are built to give better service and last longer than any other wrench on the market.

*For sale by all good
dealers*

Coes Wrench Company

Worcester Massachusetts

tools, it is not advisable to do so. Of the thousands who are now undertaking to make their own radio sets, only a very few will succeed, and the great majority will not only be disappointed, but lose both time and money.

(3) To show you the "hook up" for the different radio sets would take a great deal more space than we can give, but if you will write us what set you wish to make, we will give you complete instructions for same.

(4) The aerial consists simply of wire or wires so insulated as to receive the electro-magnetic waves, No. 14 wire usually being employed. It is not necessary for the aerial to be outside of the building or strung very high, but can be strung around the walls of the room or laid upon the floor, if necessary, as the ether permeates everything.

(5) There is no electric current necessary in the operation of the crystal detector set, but an electrical current is necessary for the operation of a vacuum tube set, or an amplifying set, both a storage battery and dry cells being used for this purpose or dry cells alone can be used.—THE EDITOR.



Gleanings from the Milk Stool

BE PUNCTUAL. The cow knows as well as you when the hour has arrived for milking and delay will not only cause a diminution of her yield for the day but also a decrease in butterfat percentage.

If you are using a scrub or grade bull, send him to the butcher and get a good pure-bred sire. "The bull is half the herd" and if he is a scrub, he is nearly all of it.

How about buying a couple of pure-bred females as the foundation for a pure-bred herd? Pure-bred livestock exists on only eleven out of every hundred farms in the United States. Only 3 per cent of the dairy cattle are pure-breeds. Surely none of us who are alive today will ever see the pure-bred business overdone, even if we live to be over 100 years old.

The world is your market for pure-breeds. Buyers come from all over the United States, from Mexico and from South America for pure-bred dairy cattle.

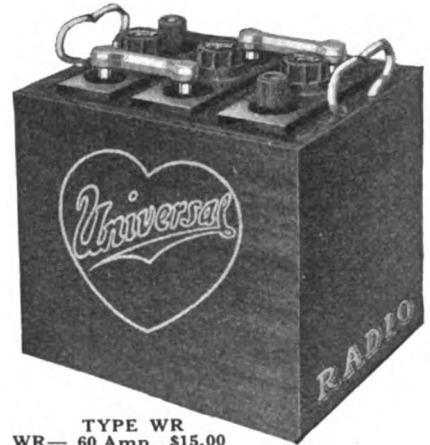
How about a pure-bred heifer calf for your boy? It will make life worth while for him. Just try it and see the results.

Why keep cows? Make them keep you.

No, they don't drink milk in China, and China has paid dearly for it, but even in America neither the city or the farm people drink anywhere nearly enough milk.



Radio Batteries



TYPE WR
WR—60 Amp. \$15.00
WR—85 Amp. 17.50
WR—105 Amp. 21.00

WHEN installing a Radio Set do not neglect the quality of the battery you use. Universal Radio Batteries are built in three types, all with heavy, long life plates built special for Radio Service. Batteries for all kinds of work. Parts for all kinds of batteries.

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direct from factory.
Write for special catalog
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UNIVERSAL Batteries



Our Readers Are Requested to Make Free Use of this Department for Questions and Answers on Modern Farming and Farm Improvements

Chimney Culvert

Editor FARM MECHANICS:

I have a ravine crossing my place about 25 feet deep which I intend to fill from the silt caused by the spring freshets, by damming it at the lower end at which point the country road is crossing it. A concrete culvert three feet wide and four feet high to the crown of



Figure 1. Cross Section of Chimney Culvert.

the arc, with abutments on both sides of the roadway will support the fill. My intention is to construct either a rectangular or a semi-circular flue or chimney against the upper abutment encircling or in front of the culvert opening. What size will I have to construct this chute (perpendicular chimney) so that it will

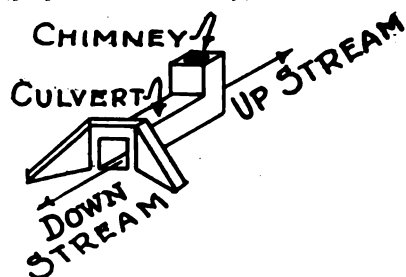


Figure 2. How the Chimney Is Placed.

take care of the volume of water that said culvert accommodates?—CARL A. JOHNSONS

Answer—The three sketches show how to build chimney up stream entering into a culvert under a fill. Fig. 1 shows the use of tile; the chimney can be built up with the tile as the silt forms. The chimney should be built at least two feet lower than the top of the fill. In Fig. 3 there is indicated a hole at the bottom of the chimney which will empty into the culvert. This is for a tile drain up into the meadow which will form. Sometimes this is needed, again it isn't.

It is always best to have the chimney low at first and build up as silt forms

on the upper side of the fill. This reduces the pressure or head of water on the new fill.

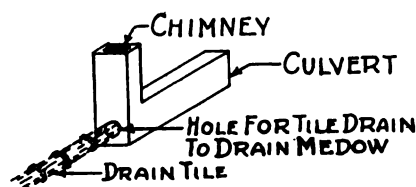


Figure 3. Showing How the Chimney Empties into Culvert.

The size of the chimney should be that of the culvert. The size of the culvert must depend upon the amount of water from the water shed. That can only be determined by local experience or by measurement of the shed which will empty into the culvert.

Farmers' Bulletin No. 997 U. S. Department of Agriculture, gives an illustration of such an arrangement.—THE EDITOR.



One Farmer's View

TO THE EDITOR:

It is interesting to read about Henry Ford's power farm in the February issue of FARM MECHANICS. The average farmer hasn't sufficient funds to buy tractors and power equipment for his farm. Those who have tractors say they can farm cheaper with horses at the present price of feed. It is not at all pleasant to work horses hard when the flies are bad and the weather is hot.

We need more factories here in Nebraska. It should be a self-supporting state as near as possible. We ship in and out too much. Things look a little different to me than it does to Mr. Ford. How are we going to raise stock and poultry if we live in town nine months of the year? We must have meat, eggs and milk. If we were to raise grain and fruit we might make it a success. We can't raise grain alone and make it pay. If I had an income of \$10,000 or \$12,000 a year outside of the farm, I would farm very much as Henry Ford does. That is if I were farming for pleasure and eventually I would make it a

paying proposition. As it is, I have to watch my nickels.

A great number of farmers, if they should by chance get a few thousand, would move to town and take it easy. I never could do that. I cannot be contented unless I am at work at something.

I have an 80-acre farm and have "batched it" for 13 years. I started "batching" at 23 years of age.

In my opinion Henry Ford and Thomas A. Edison are two of the greatest men on earth and will make more use of Muscle Shoals than any other men that I know of. It surely isn't money they are after. It looks to me as though they were trying to spread their wealth where it would do the most good.—IRA E. WRIGHT, Giltner, Neb.



Water Power

TO THE EDITOR:

We have an air power water system and at present operate the air compressor with a gasoline engine. There is a small stream running thru the farm which we have dammed up to make an ice pond. The dam gives us a total fall of about 6 feet and the opening is 2 feet wide. The water flowing over the top of the dam thru this 2-foot opening is about 2 inches deep. I believe by installing a 5-foot water wheel and connecting this to a very small air compressor we could pump air into our storage tank continuously and thereby do away with the engine outfit except in an emergency.

Would it be advisable to build a wheel at home for this installation? If so, have you any suggestions as to its construction? I have thought of having buckets on the wheel with the horizontal divisions at an angle of 45 degrees from the radius of the wheel. Is there a more advantageous angle? What power would this stream develop?—F. W. WALLIN, Jenison, Mich.

Answer—I believe that it would be much better for you to buy a water wheel than to attempt to make one at home. The water wheel is designed by

engineers after years of experimental work and tests. No one who is not a hydraulic engineer could either design an efficient wheel or make it after it is designed without the employ of special machinery.

I note that you have 5 feet fall, 2-foot flume and water 2 inches deep in the flume. Before I could figure the horse power you could get I would have to know the speed at which the water is flowing in flume.—THE EDITOR.



Clean Ditch Blasting

THIS photograph shows how remarkably "clean" a ditch was dug by dynamite in Wisconsin recently. The ditch was shot thru a marsh for the purpose of taking water away from a road lately constructed by the state thru Marinette County. No shoveling was



A Clean Ditch Dug by Dynamite.

done. Two men spent six hours, blasting all the ditch at a cost of about 95 cents per rod, including time and material. The ditch was loaded with one stick per hole, spaced from 24 to 32 inches and loaded about 12 inches deep to the top of the cartridge. Water served as tamping. The ditch was shot by the propagated method, where the explosion of one charge sets off others, and August Peters, of Middle Inlet, Wisconsin, who did the job, reports that the propagation was perfect. This in spite of the fact that the temperature of the soil and water was about thirty-eight degrees Fahrenheit. A new type of non-freezing straight dynamite was employed.



TO scatter sweet clover seed on the surface of old permanent pastures without proper preparation of the soil is like throwing money into the fire. Many have tried; few, or none, have had success.



LAST year's farm bureau tests are a good guide to use in buying this spring's seeds.



IT isn't so much the number of trees in the orchard that counts. It's what those trees produce.

Mason Made \$2500 Net In Five Months

Nice amount of money for five months' work, isn't it? You can do it as well as Mr. Mason and hundreds of others are doing. The demand for traction ditching is enormous. You can make big money with a

"A Perfect Trench at One Cut"
BUCKEYE
Traction Ditcher



With one helper you can dig more ditches each day than can fifteen men by hand. You make a perfect ditch at one cut. Farmers want traction ditching—it's better, can be done quicker and at less cost. When they know you have one, you'll be kept busy; you won't have to look for work, it will come to you. Many Buckeye owners have six to twelve months' work ahead. \$15 to \$20 daily is the net average earnings of hundreds of Buckeye owners. Here is a proposition that will give you a standing and make you a big profit each year.

Send For Free Book

A book of solid facts, tells how others are coining money, how they get the work, how much it costs to do it and all the details of operating.

Our service department is at your call to get you started and keep you going, to tell you the prices to charge and how to make big money with a BUCKEYE. Send now for the book, you can make big money too.

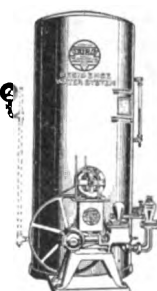
THE BUCKEYE TRACTION DITCHER CO.

538 Crystal Ave.,

Findlay, O.

READ THIS LETTER
Work has been so plentiful that I have turned away more than I have done. The machine has given entire satisfaction and far exceeded my expectations. I find it very easy to average 130 rods working ten hours. The machine has been in operation for five months and during that time I have done work amounting to \$4000 which netted me \$2500.
VICTOR MASON
Mt. Pleasant, Iowa

(1)



Shallow Well System

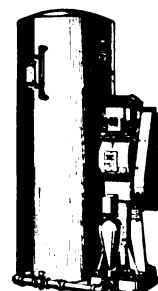
"Duro" Water Systems for Farm Homes

2c a day and a "DURO" will pump water automatically from shallow or deep wells, springs, streams or lakes, and put the water under pressure available at the turn of a faucet throughout the house and about the premises.

"DURO" WATER SYSTEMS will modernize your home and pay for themselves in time, labor and money saved.

Write for Catalog F-33, containing full particulars

THE DURO PUMP & MFG. CO., Dayton, Ohio



Deep Well System

\$39.50 Buys Kirstin ONE MAN Stump Puller



World's lowest priced One-Man Stump Puller—light, fast, powerful. Weighs only 100 pounds—manufactured by makers of the famous
KIRSTIN STUMP PULLERS
Price includes Tool Steel Ratchet Bar—Carbon Steel Dogs—All Steel Long Latted Chain—Extension Bar—Hook and Steel Anchor Cable.
Try It Out for 90 Days Low Introductory Price. Good only limited time. Write for 90 days' offer and free Catalog—or send \$5 and pay \$34.50 when Puller arrives.

Read These Letters
Cleared one and one-half acres in two days. Also pulled 18 inch Maple Stump in five minutes. A. Johnson, B-47, Chatham, Mich.
I pulled 300 stumps in five days—up to 24 inches through. C. Nos, Big Falls, Minn.

A. J. KIRSTIN COMPANY
754 First St. Escanaba, Mich.

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS



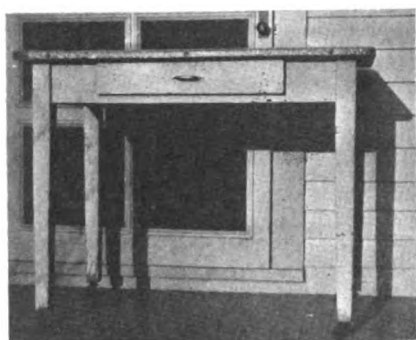
Helps for the Housewife

MECHANICS in the HOME



Table on Castors

MAN'S work is from sun to sun; a woman's work is never done! But it may be undone. Many little things if properly taken into account and utilized may be made to help the modern house-



Kitchen Table on Casters Can Be Moved Easily.

wife do her work. The illustration is a simple device that saves many steps in my kitchen that would otherwise be wasted. Ordinary castors can be purchased for five or ten cents each and will pay for themselves in time saved in a week's time. Roll your table to the place that you want to work and save those steps.—Mrs. R. W. GREGORY, Mooresville, Ind.



Can Eggs in Spring

A FAMILY of five, for their health's sake, can easily consume three dozen eggs a week. Fresh eggs, like fresh vegetables, or fruits, can be preserved during the months of abundance and used to keep the family in good health during the months of scarcity with equal success.

The best two months to preserve eggs are April and May, first because during this time eggs are most plentiful, are of higher quality, and if markets must be depended upon, are usually fresher; second, because the price of eggs at this time is about one-half or less than what it is in November.

The best method for preserving eggs is to put them down in water-glass, as it is neither difficult nor expensive. Add one quart of commercial water-glass to nine quarts of water that has previously

been boiled and then cooled. Mix the two thoroughly.

As it takes approximately two quarts of this mixture for each three dozen eggs, two quarts of water-glass and 18 quarts of water will be sufficient for a case of eggs, 30 dozen. Commercial water-glass can be obtained in almost any hardware, drug or grocery store for thirty or forty cents a quart.

Either an earthenware crock, a new ash can (if it is water tight), a garbage pail or any other galvanized vessel of convenient size may be used to advantage for a container. Earthenware crocks, however, are most commonly used. A 40-quart container will hold 30 dozen eggs, and a 20-quart container 15 dozen. The water-glass solution should not be used a second time.

Use only fresh, clean eggs with good sound shells, says W. H. Allen, extension specialist in poultry for the New Jersey State Agricultural College. If you are producing your own eggs, pack them daily as collected. Do not try to preserve soiled eggs, nor those that have been washed. For best results eggs should not be over a week old, and infertile eggs are preferable for preserving.

Preserved in this way, eggs should keep for at least ten months. One should not be alarmed to find a whitish, jelly-like substance in the bottom of the container, as this does not mean that either the eggs or the water-glass have spoiled. Rinse off the thick solution in cold water and the eggs are ready for use.

"Canned" eggs require a little different treatment in cooking than do fresh ones. Unless the large end is punctured beforehand they will crack when boiled. Also, they do not poach or fry well because the white is a little thin and the thin film or membrane separating the yolk and white breaks down with age. But they are entirely satisfactory for scrambling, omelets, custards, cakes and other kinds of cooking.

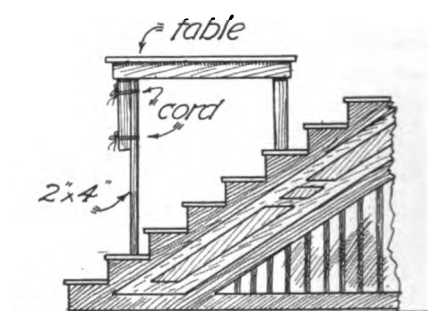


Cleaning Stairway Walls

IT is sometimes a problem as to how to best clean walls and ceilings of the stairway. A stepladder is woefully

incapable, since the varying levels of the steps offers no firm footing.

This work can be done in good shape by taking a small table and fastening two 2 by 4's to the two legs at one end. These pieces are cut the proper length and the upper ends set against the under



CLEANING STAIRWAY WALLS

Extension Legs on Table for Use in Cleaning Stairway Walls.

surface of the table top. Cord or wire will hold them in place.

It will be seen by the sketch that the improvised table presents a rather substantial appearance and should not cause the housewife any qualms of fear when using it. The table can be moved up and down the stairway as the work progresses.

By using a longer table the height from the low side to the top of the table is correspondingly increased so that by varying the length of the temporary legs almost any height can be secured.—D. R. V. H.



IT pays to welcome newcomers, whether to the neighborhood or to the farm flock and herd. The right kind of a welcome when they arrive usually helps them do their best later.



ANIMALS are judged by points. Somebody suggests a score card for parents.



APIECE of twine or fine wire will make a clean cut thru a cake of laundry soap.



TO make porridge without lumps in it, mix cereals or cornmeal with a little cold water before they are put into the boiling water.

Type Sets Price

ULTIMATELY all meat animals go to the block. Those that produce the maximum of choice cuts and the minimum of waste are in great demand and sell at a premium. That purebred types are directly in line with market types is easily seen any day on a big market by the fact that expert buyers fight to get that car of high grade steers or that car of purebred hogs. There is a reason. They are better killers.

Any sire is high priced that will not pass on to his offspring the characters which go to make them desirable from the market standpoint. It is only natural that a good pure bred sire will transmit desirable characters because he is the result of a consistent system of breeding to produce desirable characters. He will transmit his qualities and is therefore cheap at any fair price. On the other hand, a scrub sire is the result of slipshod breeding methods with no definite goal in mind. Naturally he is powerless to transmit desirable characters. It is impossible for him to transmit the characters which demand a premium on the market. He is therefore a losing investment at the lowest price.



Pennsylvania to War on Ants

THE State Forestry Department of Pennsylvania plans to wage active warfare this spring on mound ants that infest State nurseries and plantations by using high-power explosives.

The department has been fighting the ants with poison gas but officials say that insects appear to have perfected gas masks. They flee after the attacks and soon begin their activities in some other spot.

These ants live on the honey made by plant lice and bore into the bark, sometimes destroying all the trees over large forest areas. Dynamite has been found to be more effective and the department plans to blow up the mounds this spring.

Noted Hereford Herds of the United States

KENTUCKY HEREFORDS

HERD BULLS { Beau Donald, 198th, No. 560445
Beau Donald, 180th, No. 425716
Harris Repeater, No. 361797

For Sale, ten cows and ten two-year old heifers bred to above herd bulls. Also a few choice young herd bulls.

GILTNER BROTHERS
Eminence, Ky.



WATER PAUL SYSTEMS

provide an abundance of running water for the home and farm.

PAUL SYSTEMS

Save Labor—No more pumping and carrying of water by hand.

Bring Conveniences—water for kitchen, bath, laundry, etc.

Protect Health—keep the home clean and sanitary. Plenty of water for cleaning, scrubbing, purifying.

Protect Property—water under pressure for fire.

Increased Farm Production—water in abundance for live-stock and irrigation. An abundance of water for the dairy herd increases the production of milk.

Increased Property Values—in a hundred ways, the PAUL system increases the valuation of property in town or country.

If you have not a PAUL system, write for catalog and full particulars.

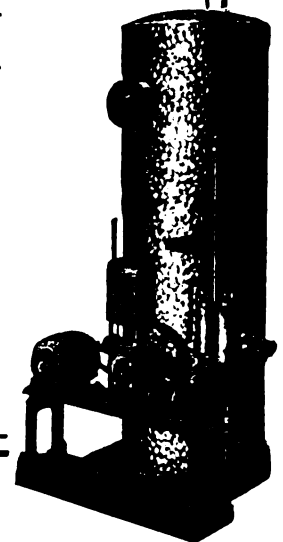
If you have the PAUL system, tell your neighbors of it and have them write to us.

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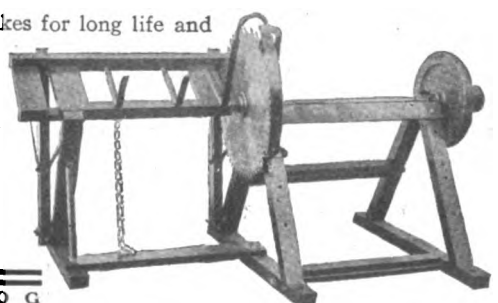
FREEMAN Wood and Pole SAW FRAMES

Rugged sturdy construction that makes for long life and consistent performance. Simplicity, adaptability to varied conditions, satisfactory service in the hands of industrious workers characterize the Freeman.

The price is reasonable.

FREEMAN MFG. CO.
200 Lakeside Ave., Racine, Wis.

SEND FOR CATALOG





To Remove Carbon

To the Expert:

Have been reading your articles on Tractor Overhauling, and hope to see one on the Huber tractor.

What is the best way to remove the carbon from the Waukesha motor in the Huber tractor? What care does the magneto need, etc.? These are some of the questions I would like to see answered.—DONALD T. SAYRE, South Lyon, Mich.

Answer—There are only two methods of removing carbon successfully from this type of motor. First, burning out, which is done by oxygen being blown into the cylinder head by a small tube inserted in the spark plug hole. The oxygen when combined with the carbon in the cylinder forms a mixture which is ignited by throwing a match in the hole and will continue to burn as long as there is any carbon for the oxygen stream to come in contact with. This work should never be attempted by anyone except an experienced man, as there is great danger of fire.

The second method is to take off the valve posts and scrape as much carbon out thru the port and valves as can be reached by the use of special flexible scrapers which can be had in different shapes to meet different conditions.—F. M. SERVICE.



Mixture too Lean

To the Expert:

Your article in regard to making the adjustments on the Titan tractor was very good, but I find I have one trouble that I cannot understand. Perhaps you can tell me what is wrong. It seems to be in the air valve, when I start it gives an explosion and then stops. The spark plugs seem to be O. K., so does the magneto and it is timed right. It runs all right when I do get it started except when I pull the spark lever back it wants to stop. What could be my trouble? Would like to hear from you thru FARM MECHANICS.—JESSE J. SANDERS, Leesburg, O.

Answer—It would appear that your trouble is due to the explosive mixture

Mr. Service will answer free of charge for Farm Mechanics readers questions of general interest on Automotive troubles. As a "trouble shooter" he is probably the best equipped man in the industry, having diagnosed the ailments of thousands of automobiles, trucks and tractors. Put your troubles up to F. M. Service—Editor.

fed to the cylinders being too lean. This causes it to burn slowly and with not enough strength to carry the flywheel over after one explosion to the next. Also the fact that the engine seems to want to stop when the spark lever is retarded points to the same cause.

Try running the engine with a slightly richer mixture. If this does not correct your trouble grind in the valves as the compression may be not up to standard.—F. M. SERVICE.



New Gears Needed

To the Expert:

Would you please answer the following questions?

I have a Buick 4, five-passenger touring car, 1918 model. For over a year now I have had trouble with the shifting fork jumping out of high into neutral. In going up a grade or striking a rut it bounces out every time. I would like to find out what causes this so it can be fixed as it is becoming a nuisance.

I had my machine taken to the garage in November to have this taken care of. Before taking it I spoke to the garage man about it and he thought it needed new high gears. After it was there he looked it over and said the gears were all right, but it needed a new shifting fork. After putting in a new fork it jumped out just the same, then he said it needed the new high gears.

I had it brought home without having this done, as I thought probably it would act the same after having new gears put in, and I didn't care about investing the money and then not having it work satisfactorily when finished. They charged me \$18 for their labor and it doesn't work a bit better than when it left home.

Would you please let me know where

you think the trouble is so it can be taken care of, as I would like to learn to run the machine, as Mr. Best had his right arm taken off in corn shredder last October so he is unable to run it, and I don't care to learn with it in the shape it is in.—MRS. S. J. BEST, Kimball, O.

Answer—The garage man diagnosed the trouble of the transmission jumping out of high correctly in the first place, but he evidently did not have the courage of his convictions, for the trouble is doubtlessly in the high speed gears.

These are what is known as internal and external locking gears, and when you throw your shifting lever into high speed you simply throw a gear into a set of teeth cut on the inside of another gear. What has happened in your transmission is that the old shifting fork became bent or twisted and did not engage the gears deep enough so that they tapered off as they became worn and finally became so slanted on one side that now they simply slide out when a strain is put on them, such as a slight grade, etc.

To replace these gears is not a very difficult job and should not take a good mechanic more than eight hours time.—F. M. SERVICE.



Small Tractor Lacks Power

TO THE EXPERT:

I am going to ask your advice. I am having trouble with the tractor the makers rate at 5-10 H. P. for a 16-inch plow, plowing 8 inches deep at 3½ miles per hour. I only plow 5 inches at 1½ miles an hour. We had a service man from the company a short time ago and he adjusted the valves. There is one or two cylinders a little off. He said he fixed them, but the next day the cylinders missed as badly as ever, if not worse. By turning engine over by hand we find the compression good at times when the engine is cold and only the compression in two cylinders good when a little hot.

We use oil the company recommends and refill every 50 hours' run. When the engine warms up a little the oil smokes at breather tube and exhaust. When plowing engine gets dangerously

hot—boiling water. Spark plugs get full of oil and have to be cleaned often. We always keep the engine free from carbon. The tractor is only one year old.

I think the company overrated the power, as the motor is 4 cylinders L head type, $3\frac{1}{8}$ -inch bore and $4\frac{1}{2}$ -inch stroke. Something must be wrong.—
ALBERT G. CUNEO, Chalfont, Pa.

Answer—If we knew the make of your tractor it would be more easy for us to try and locate your trouble. Certainly, if your motor is of the L head type and the bore and stroke as you say, it should develop the horse power as rated by the manufacturer, tho, of course, the plow rating that they claim is developed only under the most ideal conditions. It is possible that the soil in your locality is such that the tractor cannot pull its maximum size plow. However, if you can only run $1\frac{1}{2}$ miles per hour with a 5-inch furrow, there is certainly something radically wrong.

The apparent lack of power must come from one of two things: First, poor compression, caused by leaky pistons and rings, or the valves not seating properly, due to warped valve stems or pitted valve seats and faces. Also the adjustment between the valve and valve tappet being too close would cause this leakage.

The best way to test the motor for compression is to borrow a compression gauge from the nearest garage and try it on each cylinder. It should show about 40 to 60 pounds compression when the piston is at top dead center and should hold it for a few seconds before dropping. If, however, when the motor is turned over until the piston comes to the top on the compression stroke, the gauge flies up and then immediately drops back, you can be sure that the compression is not right and it will be necessary to take down the motor and carefully inspect the pistons, rings and valves for the cause, and refit new parts for the ones that do not fit perfectly.

The other thing that may be causing the trouble is the motor being operated with too retarded a spark. This would account for it overheating. The way to find out if this is the trouble is to advance the spark at the magneto and try in different positions until the point where it operates the best is obtained.

If after trying the above suggestions the tractor will not operate any better, advise us the name of it and we will try to give you some additional advice.—
F. M. SERVICE.



Car Balks at Hills

TO THE EXPERT:

As I am a reader of FARM MECHANICS

End Bad Times with Timers

FREE yourself from a "pepless" motor dragging its stuttering way wearily over the road just because of a weak spark.

U & J will put new life into your Ford—will give it a real chance—will save you its cost five times over in 100% service.

U & J Timer (for FORD Cars)

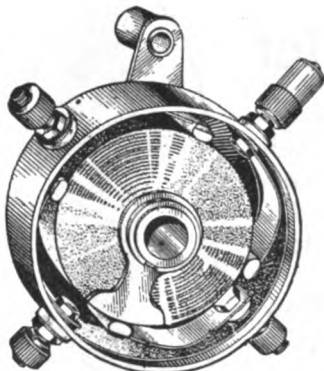
is built on the Rotor principle—approved and used by the leading electrical engineers of the world on all dynamos and motors. Just one solid disc—keyed to the timer shaft—there's nothing to get out of order—a firm, broad, wipe contact with each terminal.

Stop playing around with complicated timer toys and use the timer built as the finest electrical engineers have dictated.

We Want Four Million Men to be Happy

with the service they are getting from their Ford cars—or tractors—or trucks.

The Best Way We Can Help Them is to Make it Easy for them to Own a U & J Rotor Timer. So we are offering it on a 15-day trial plan with a money back guarantee if the U & J does not prove everything we claim for it—a Timer that will not burn out—that will outwear five ordinary timers—that will deliver perfect results for from 15,000 to 30,000 miles of running. Mail the Coupon. SEND NO MONEY—your mail-man will collect \$2.50 upon delivery—try U & J for 15 days—if you are willing to part with it, then send it back.



U & J Carburetor Co.

World's Largest Exclusive Manufacturers of Motor Devices

506 W. Jackson Blvd. Chicago, Ill.

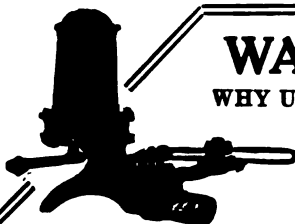
Mail the Coupon today!

U & J CARBURETOR CO.,
506 W. Jackson Blvd., Chicago

Please send me one U & J Rotor Timer for Ford Car—parcel post—collect—with the understanding that I may return it within 15 days and get my money back.

Are you interested in our Sales Agency Proposal?

Do you want our General Catalog?



RIFE Hydraulic RAM

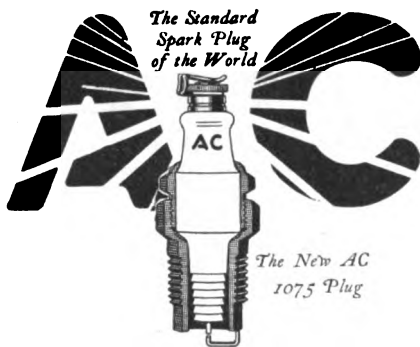
RIFE ENGINE CO., 143 Cedar Street, New York City

WATER WITHOUT FUEL

WHY USE gasoline, coal and oil when your water can be pumped without the cost of either. The prices of all are advancing steadily. Now is the time to economize by using labor-saving and expense-free machinery.

The Rife Hydraulic Ram will give you a permanent water system without care, fuel or upkeep—if you have a spring or stream on your farm with a fall of 8 feet or more and a flow of 8 or more gallons a minute. The Rife Ram works day and night, winter and summer. It requires no repairs and no labor; there is nothing to get out of order. Someone near you is using a Rife Ram and will verify this.

Our experts will advise you fully how to install and use the ram. This service is yours for the asking. Write today.



Why You Should Change the Plugs in Your Ford Engine

AC 1075 Has These Big Features

- 1—Patented wire terminal clip so that you can remove and attach Ford terminal instantly, without stopping engine, for testing plug or coil.
- 2—New electrode design, forming natural drain so that no oil can lodge in spark gap.
- 3—Plug comes apart so that porcelains accidentally broken can be replaced.
- 4—Knife-edged Carbon Proof porcelain which burns off soot and carbon as fast as they form.

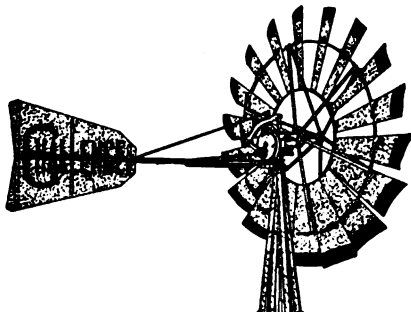
Most engine troubles come from worn-out or incorrectly designed spark plugs.

Install a set of AC 1075 Plugs and see what a difference it makes in performance.

If your Ford dealer will not supply you, any other good dealer will meet your needs.

AC Spark Plug Company, FLINT, Michigan

Have YOU Seen the CHALLENGE Self-Oiling Windmill



If not, go to your dealers or send for our three color folder describing it. Fitted with the famous HYATT ROLLER BEARINGS with oil reservoirs. The lightest running, simplest and strongest mill made. The mill you should have for your farm.

Challenge Company

188 River Street

Batavia

Illinois

crankcase. It is not touching the oil and it will be necessary to drop the case again and be sure the tube is in place when putting back.—F. M. SERVICE.



Crankshaft Broken

TO THE EXPERT:

I have an old four-cylinder motor which is in good shape, except for a broken crank shaft. I expect to fix this myself. Please tell me how to go about this job, especially as to fitting up the crank shaft bearings, as I have never done this particular job before.—CHARLES BAUTSCH, Galena, Ill.

Answer—If you will read the fitting of the main bearings and connecting rods as described in the March issue under the title "Overhauling the Fordson Tractor," you will be able to apply the same information to your motor, for after all every type of internal combustion motor has the same method of fitting bearings. While the construction may vary in the different makes in detail, the same methods of repair will apply.

However, if there are any points you do not understand, advise us the make of your motor and we will be glad to describe the operations more fully.—F. M. SERVICE.



Verdegris on Battery

TO THE EXPERT:

Would you please tell what causes the verdegris to form around the terminals of the batteries?

Would using vaseline or other grease cause this verdegris to form?—L. C. KEPNER, Nutwood, Ohio.

Answer—The forming of verdegris around the battery terminal, which you will notice is only around the positive terminal, is an electrical condition known as electrolysis and is due to an electrical action in contact with the moisture in the air. The best way to prevent it is to clean the terminal, then spread a light layer of grease or vaseline over the entire terminal.

The purpose of this grease is to prevent the air from coming in contact with the lead of the connection and terminal post. Instead of the grease helping to form the verdegris it is really a preventative.—F. M. SERVICE.



Gas Engine "Knocks"

TO THE EXPERT:

Having been a subscriber to FARM MECHANICS about four or five months, I think it a dandy and think I could not get along without it now. I am a

A Catalog and price list of Well Drilling Rigs and Equipment, Bits, Stems, Jars, Rope Sockets, Fishing Tools, Etc., will be sent on request.

Keystone Well Drills are dependable tools for Water, Oil and Gas Wells, Mineral Prospecting, Blast Hole Drilling. Portable and Traction Drills for all depths, 25 to 3000 ft.—Steam, Gas, Motor or Electric Power.

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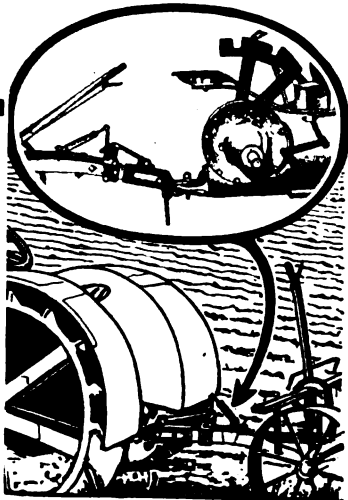
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\$15.50**

Write for literature and name of nearest dealer

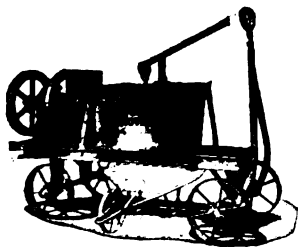
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Great opportunity to get into big money making business.

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Concrete Equipment Company
600 Ottawa Ave., Holland, Mich.

Make Money! Do Your Neighbors Work

farmer and also a mechanic for myself and the neighbors, and have operated gas engines for twenty years.

I got up against it today. A neighbor has a 1½-H.P. Fairbanks-Morse engine, Z type, make and break ignition with a rotary built-in magneto. The engine will run apparently all right, but it will knock with every explosion.

I have changed the time of firing from 15 degrees before center to 15 degrees past center, and it does not change the knock at all. I cleaned the carbon all out, examined all bearings and found them all right. This knock sounds like preignition knock, but it does it with the first explosion when you start, but is very quiet while hooked up between explosions.—C. C. COTWELL, Lewisburg, Ohio.

Answer—From your description it does seem as tho the knock you are unable to locate is caused by pre-ignition. However, any of the following things could cause a knock of this kind: Main bearings, connecting rod bearings, wrist pins, pistons being broken or cracked, broken piston rings, broken timing gears, broken or cracked magneto coupling and broken or warped valve gear.

We would suggest that you carefully inspect each part named above for a defect that would cause the trouble. If they all are in good condition the trouble must be in the ignition or valve timing and the best method would be to check them both up by the piston travel to see that they are operating at the correct position of the piston stroke.—F. M. SERVICE.



Discs for Fordson

TO THE EXPERT:

What size disc harrow would you recommend for a Fordson tractor? I figure on a double disc. The soil is a clay loam. An 18-inch disc would pull easier than a 16-inch, but would it do as good work?—EMIL ANDERSON, Braham, Minn.

Answer—The disc harrow that is recommended for use behind a Fordson tractor is made in the 5, 6 and 7-foot sizes, and can be had with either 16 or 18-inch round disc blades.

In your case we would recommend the 18-inch blades with the 7-foot size harrow. You will find that in your kind of soil the 18-inch disc will pull more easily than the 16-inch and will do just as good work.—F. M. SERVICE.



BECAUSE it runs deeps, is self-pulling, and leaves the ground more fertile, the clover or alfalfa plant is the best kind of a sub-soiling plow.

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"SHORT CUTS" TO GOOD CARPENTRY ON THE FARM

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Now is the time to decide on your belting equipment for the threshing season that will soon be here. You will want economical, powerful, trouble-free belting. You can have all those qualities at their best in the Goodyear Klingtite Belt.

Goodyear Klingtite Belts are all-weather belts. They are not affected by heat, cold or damp. Their Goodyear ply construction gives them long life; they wear evenly and do not separate at the plies. They hold the pulleys in a slipless grip and deliver full power always.

GOOD YEAR

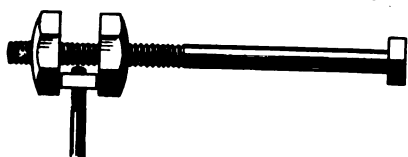
KLINGTITE BELTS

HANDY ANDY'S DEPARTMENT

WHERE FARM MECHANICS READERS CAN PASS ALONG GOOD, TESTED IDEAS.

An Emergency Wrench

USUALLY when a person needs a wrench most there is none at hand. The illustration shows how one may be



An Improvised Wrench Made of Bolt and Two Nuts.

made from a bolt and two nuts. The nuts are screwed on so that they face each other. By turning one of them the correct adjustment can be secured. Of course this wrench is not as efficient as a regular one, but it will be found useful at times.—KURT HAESS, Town Line, N. Y.



Twisting Wire Cable

GALVANIZED wire cable is one of the best and cheapest forms of bracing for fence corners. The fact that it is hard to make is perhaps the reason why it is not more often used. For one thing, No. 9 wire is unwieldy at best and the twisting proves something of a problem. Another is that when twisting, whether cable or cord, the end being twisted is always twisted tightest, leaving the other end loose.

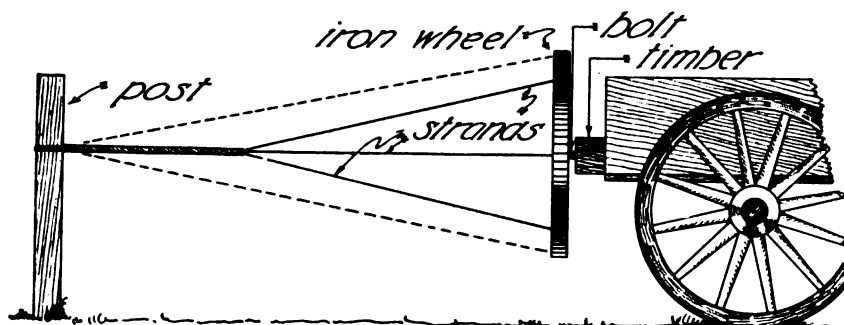
A handy way of making wire cable as it is needed is shown in the drawing. An iron wheel, two or three feet in diameters, is fastened by means of a long bolt driven thru the hub to a heavy timber. This is laid in the back end

\$1 for an Idea

I, Handy Andy, am famous, because I am found on nearly every farm. When some little thing that would make farm work easier pops into my head I get to work and build it. Farm Mechanics has asked me to pass my ideas along, so as to help everyone do things more easily. I want to pass your ideas along, too. Send them to me, using not more than 200 words, and a pencil sketch or photograph to illustrate it. I will send you \$1 for every idea accepted. Address your letter to me.

HANDY ANDY,
Care Farm Mechanics,
1827 Prairie Ave., Chicago.

of the wagon and tacked down with the end board removed. The wagon is backed up the proper distance from a post and the wire run out around the post and back to the wheel. If four strands are to be used, the ends are twisted about four opposite spokes of the iron wheel, next to the rim. This provides a wide angle at the other end and when the wheel is turned, the strands wrap themselves closely about one another. As the twisting progresses the strands are moved along the spokes towards the hub, thus insuring a uniform twist from one end to the other. When finished, the ragged ends are cut away, leaving the cable ready for use.



TWISTING WIRE CABLE

Device by Which Several Strands of Wire Can Be Made into a Cable.

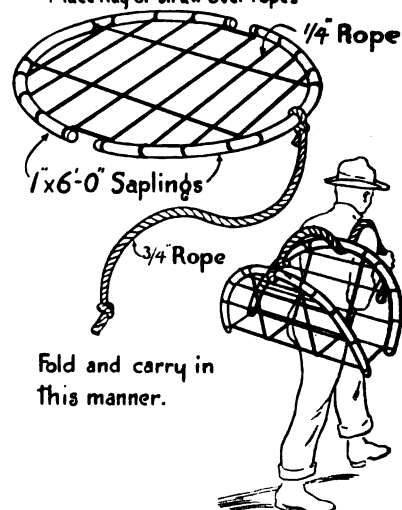
Cable can, in this manner, be prepared about as quickly as it takes to tell it. The weight of the wagon keeps the tension uniform at all times. Ten or 100 feet of cable can be made in this way.—D. R. V. H.



Hay or Straw Carrier

THE device shown in the illustration makes it easy to carry straw or hay, especially when the wind is blowing. This is often necessary about the farm, as every farmer knows. Takes two limbs about 1 inch thick of a tree of any sort that will bend readily. Bend them

Place hay or straw over ropes



Fold and carry in this manner.

Folding Carrier That Prevents Hay or Straw from Blowing Away.

so they make half circles. Then tie them as shown in the illustration with 1/4-inch strong rope. The carrier is put on the back with the two portions turned as shown, holding the hay or straw.—EDWIN SKADOWSKI, Friendship, N. Y.

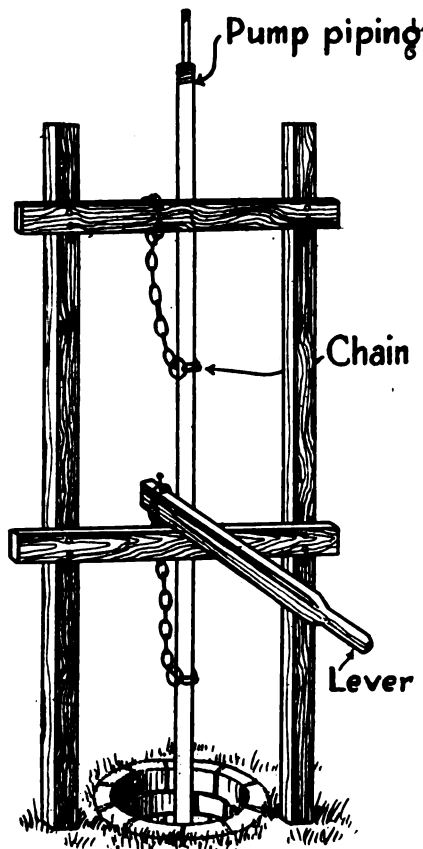


Raising Pump Piping

OCCASIONALLY it becomes necessary to remove the pump piping from the well for the purpose of repairing the valves, replacing worn-out leathers, removing obstructions from the valve seats and general repair work. It is an extremely difficult task, often impossible, to raise the entire column of piping by direct muscular vigor, due to the considerable, combined weight of the

pipng itself, the cylinder and contents and the valve rod, to remove them for these repairs. The accompanying illustration shows how two ordinary trace chains and a hand lever are attached to the piping in a manner that renders the task of hoisting the load much easier.

Erect two posts on opposite sides of the well about 10 inches out of line with the column of piping. Across these posts nail a crosspiece horizontally three feet above the earth. About five or six feet above this crosspiece nail another similar one, as shown. Make a hand lever of 2x3-inch scantling five feet long, drawing one end down to a good hand grip. Pass the opposite end of the



Outfit for Raising Pump Casing.

lever across the lower crosspiece and attach one end of the trace chains to its end after arranging both chains as follows:

Loop one of the chains around the piping by passing the small or ringless end thru the ring in opposite end, below the lower crosspiece, attaching it to end of hand lever as above. Loop the other chain likewise around the piping just under the upper crosspiece and attach its loose end to the upper crosspiece. It will now be found that when the lever is pried downward the lower chain will automatically grip the piping tightly, raising it several inches, till lever is released. Then, as the lever is again raised, the upper chain likewise auto-

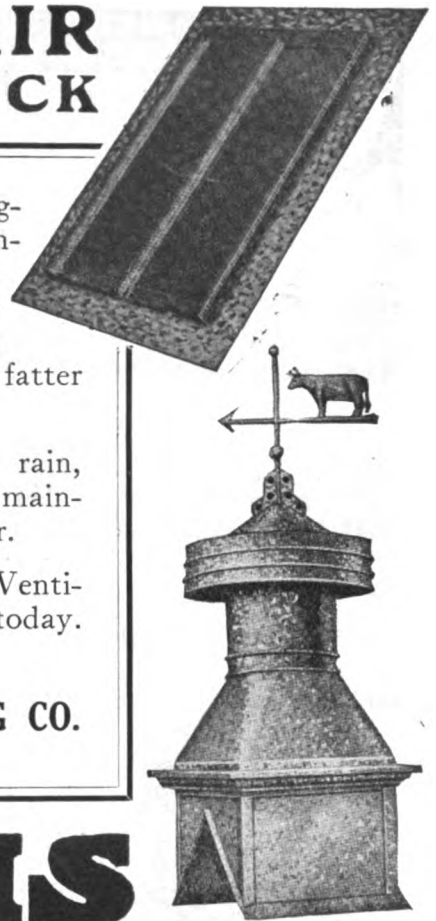
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FOR THE 101 THINGS THAT NEED TO BE DONE AROUND THE FARM

YOU can make almost anything you want with the Parks Four-in-One Woodworker in short order. Hog troughs, bins, poultry houses, corn cribs. You can finish your timber, match silo staves, cut barn patterns, build a garage. It makes spare time go four times as far as when you do the work by hand.

The Parks Four-in-One stands up to the hardest work. Built of heavy angle steel, stoutly reinforced. Smooth running, easily adjustable, portable. Saws material up to 7 in. thick. 22-inch band saw cuts to center of 44-inch circle. Strong — rigid — Price \$225.00. Guaranteed for 10 years.

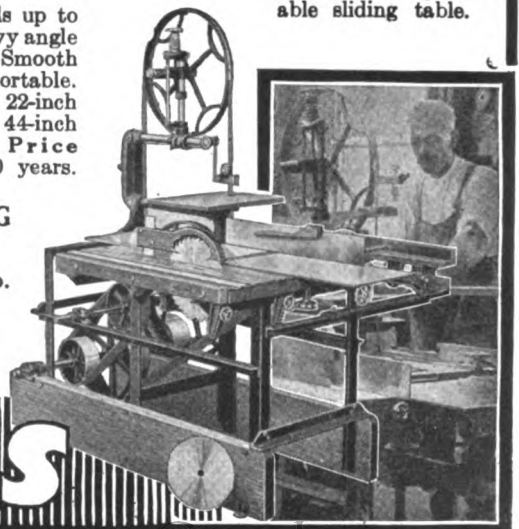
Combines Circular, Rip and Cross-Cut Saw; Band Saw; 12-in. Jointer and Boring Machine. 21½—4 H. P. 550 R. P. M. Tight and loose drive pulleys, 10-in. diam. by 4 in. face. Adjustable sliding table.

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Please submit for examination Hawkins Electrical Guides (Price \$1 each). Ship at once, prepaid, the 10 numbers. If satisfactory, I agree to send you \$1 within seven days and to further mail you \$1 each month until paid.

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WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

matically grips the piping instantly and securely, retaining its weight till another stroke is made with the hand lever. As the lever is raised the loop in lower chain automatically releases its grip and drops down around the piping several inches, and when the lever is again depressed, the lower chain grips the piping and raises it another considerable distance, the upper chain dropping down around the piping till lever is again raised. In this manner the task of hoisting is greatly facilitated and made possible for a single man to easily and safely hoist the whole load. The manner in which the chains grip the piping is secure and will not let it slip backward into the well, and no attention is needed for them to slip them on the piping as the lever is operated. Eight to 10 inches raise should be realized at each stroke of the lever, and a section of piping is drawn in a few minutes.

By the same arrangement the piping is easily replaced into the well, except that it will be necessary to raise the chains around the piping as the lever is operated, their gravity opposing self action. The operation of the lever is the same as that of the pump lever, up and down, the operation of the chains is automatic in the hoisting process. The construction may vary, but the principle remains the same.—L. M. JORDAN, Wallace, Ala.



Handy Jack for Any Car

THE illustration shows a handy jack that will be found very useful and efficient in the home garage. For material ordinary pine or fir will do. The illustration will give an idea of the principle involved, and suggested dimensions for the material. "A" shows position of the hub of the wheel with respect to the jack. "B" should be made just long enough to fit under the hub when the wheel is resting on the floor and the jack is in the position (Figure 2) ready to raise the wheel. "D" is the handle. It should have the corners rounded off

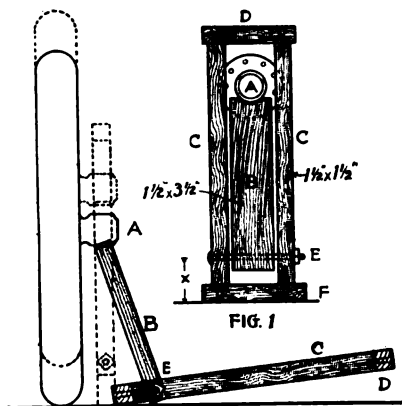


FIG. 2
Handy Jack That Is Easily Made.

1/2 SAVED
GET OUR BIG BOOK

DO YOUR OWN PLUMBING & HEATING AT LOW COST

By our New Cut-to-Fit Method, any handy man can install his own plumbing or heating plant. We furnish the system most suited for your building. You save unnecessary material and expensive labor. Any farmer can do the work by following our simplified installing plans and easy-to-use.

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We carry everything in Highest Grade, easily installed plumbing and heating supplies. BATHROOM OUTFITS, TOILETS, LAVATORIES, BATH TUBS, LAUNDRY TUBS, WATER HEATERS, WATER SUPPLY SYSTEMS, PIPES, FITTINGS, VALVES, PIPELESS & WARM AIR FURNACES, HOT WATER & STEAM PLANTS, ELEC. LIGHTPLANTS, ETC.

Send for Free Farmers' Booklet
Our easily installed outfits and low prices will surprise you. Write to-day and save.
\$500,000.00 Plant behind our guarantee.

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and strength pumping water, grinding stone, grinding feed, sawing wood, shelling corn or cleaning grain by hand.

Put Your Ford on the Job with a B-B Auto Power Pulley
Belt operated. Attached to rear wheel of Ford—put on or taken off in a minute. Makes car a 2-15 H.P. power plant. No damage to car. Lasts a lifetime—pays for itself in one day. Price for Fords \$5.65 (other cars \$7.65) Guaranteed.

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Save over \$100—assemble it yourself
Get this wonderful new complete 32-volt plant for your farm and home. Lowest cost light for house, barn and yard, power for washer, sewing machine, churn, separator, etc. Simplified, dependable, no useless fixings, low upkeep, highest quality, price cut to bedrock. Why pay others \$300 to \$500? Save entire cost to install; do that yourself. Absolutely guaranteed, 9 year success; 30 days free trial. Free booklet tells all, send for it. **ENGINEERING LABORATORIES, Dept. 500M, Sandusky, O.**

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Simplest—Most Durable—Easiest
Installed Speed Governor on Market
List \$10.00
Reg. Parts Discount to Ford Dealers
YOST AUTO CO. Sutton, Neb.

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Automobile Accessories

Write for It Now—Hundreds of Bargains
SPARK PLUGS
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432-Q Main Street Cincinnati, Ohio

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so as not to injure the hands. "CC" should be made long enough to clear the hub at least two inches when the jack is in the raised position. "E" is a $\frac{3}{8}$ -inch carriage bolt thru "CC" and "B." It should be approximately three inches (x), above the lower end of the jack, this being the approximate height the wheel will be raised. "D" and "F" are fastened to "CC" with 3-inch screws or large nails.

This jack requires very little effort to raise the wheel of a large car. A set of four is an excellent substitute for the old method of "blocking up" to deflate the tires during the winter.—CHAS. A. DANA, Malta, Mont.



Warm "Eats"

BESIDES furnishing greater kitchen convenience for the wife, the running water system in one farm home is making the work of outdoor feeding in winter an easier matter for the farmer and is furnishing warm "eats" every day for the livestock.

A hose attached to the hot water faucet in the kitchen sink is extended thru the ventilator in the storm sash of



Hot Water from the Kitchen Makes Warm Eats for the Livestock.

a window conveniently near by. Thence, the hose leads to the swill barrel outside, and in this the hot water is carried to be mixed with the grain and the skim milk for the swine family. That the farmer is not the only one who appreciates the results of the simple device is shown by the vigorous manner in which the warm food disappears on a cold wintry day.—HAZEL HANKINSON, Madison, Wis.



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For All Models of Ford Cars

White, Black, Cream and Red Enamel Finish,
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Dayton, Ohio, U. S. A.

Silo Fillers This Year Will Be Bought on Merit and Price



Pickering of Kansas City!

IN the July issue of *FARM MECHANICS The Judge* will throw his spotlight on the methods and practices that have made the Pickering Farm, of Kansas City, Mo., the most notable of its kind in the country. This is one of our series of "Notable Farms in Picture and Story," and every *FARM MECHANICS* reader should be sure to read the installment.

Thru these picturized portrayals of famous American farms, *The Judge* is endeavoring to place before readers valuable information and facts concerning farming methods that have been tested out and have been found successful along specific lines. Each feature is complete, and all readers are invited to question *The Judge* on any point under discussion. You are also invited to name some famous farm which, in your opinion, is worthy of presentation under "Notable Farms in Picture and Story." Write to *The Judge*, care of *FARM MECHANICS*.

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-:- Rate for advertising in this Department 10 cents per word. Cash with order -:-

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NOTICE TO ADVERTISERS

Forms for the June number of Farm Mechanics will close promptly on May 15. New Copy, changes and orders for omissions of advertisements must reach our business office, 1827 Prairie Ave., Chicago, not later than the above date. If new copy is not received by the 15th of the month preceding date of publication the publishers reserve the right to repeat last advertisement on all unexpired contracts.

FARM MECHANICS.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912.

Of Farm Mechanics, published monthly at Chicago, Ill., for April 1, 1922.
State of Illinois }
County of Cook }

Before me, a notary public in and for the State and county aforesaid, personally appeared B. L. Johnson, who, having been duly sworn according to law, deposes and says that he is the Editor of Farm Mechanics and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 448, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, Wm. A. Radford, 1827 Prairie Avenue, Chicago.

Editor, Bernard L. Johnson, 1827 Prairie Avenue, Chicago.

Managing Editor, J. D. Eddy, 1827 Prairie Avenue, Chicago.

Business Manager, Paul N. Rothe, 1827 Prairie Avenue, Chicago.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.)

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B. L. Johnson, Chicago.

R. D. Radford, Chicago.

Wm. A. Radford, Jr., Chicago.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)
None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in

any other fiduciary relation, the name of the person or corporation from whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is—(This information is required from daily publications only.)

BERNARD L. JOHNSON.

Sworn to and subscribed before me this 30th day of March, 1922.

ANDREW JOHN NAUMANN.

(My commission expires October 23, 1925.)



Dam the Ditches

NO one likes to farm a field which is full of point rows, yet ditches which cannot be crossed with machinery have a way of running zig zag while they grow deeper from year to year. Some of these young valleys have grown too deep to be stoped with ordinary methods such as better cultivation, brush dams and piles of straw.

The soil saving dam has proven to be the solution in cases where the water shed is not too large. A dam resembling a road grade is built across the ravine. A concrete or tile tube passes under the dam just as a culvert is placed under the road but this tube turns up vertically on

the up stream side of the dam.

Let us suppose a heavy, washing rain falls on the hillsides and flood waters come down the ravine loaded with the richest soil on the farm, sooner or later the water encounters the dam and is empounded above it until it reaches a sufficient depth to run away, thru the tube. The sediment is dropped above the dam because the current is checked and each flood bringing down its load gradually fills the ravine. It is always well to build the dam higher than the banks of the ravine so that an excessive flood can escape around the dam without washing it out.



PERHAPS the greatest drawback to the dairy business is that a cow will produce a little milk, no matter what she is fed. Too many dairymen are satisfied with that little bit.



SEVERAL pounds of lead arsenate, some "Blackleaf 40," and blue vitrol and lime for Bordeaux mixture is pretty good insurance against the common garden insects. Get 'em now for use as needed.



MAYBE a woodlot is the best crop for that back field that's puzzling you. It's the surest investment for some kinds of land.

Over-heating!



Now You Can
Avoid This
Well-Known
Danger

YOU'VE noticed how over-heating cuts down the power in sand and on hills—where you need it most.

Perhaps you've heard a peculiar "knocking" during the last few miles of a long drive, but after turning off the switch the motor still continued to fire—with every explosion sounding like a hammer blow at the very vitals of your engine. Your mechanical instinct tells you that over-heating harms your engine and robs it of efficiency—but did you ever stop to figure how dangerous it really is?

Experts tell us that 30 minutes' running of a hot motor, with water boiling or steaming at 212° puts your car about 300 miles nearer the junk heap. Carbon bakes hard, valves tend to warp, gasoline preheats and loses power. Oil thins out and invites scored cylinders and undue friction on the bearings.

10 Days'
Trial



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Guarantee

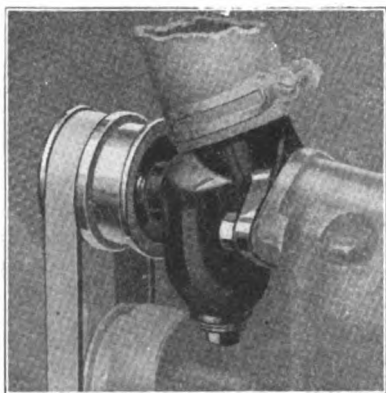
You need never fear over-heating or its dangers with a "FLOOD" pump on your Ford. Pick out the "hard going" that used to take the pep out of your motor. Hit for the "low-gear" hills you've dreaded to climb before. If you can make your motor boll—if you don't get full-power and full economy every minute—just say so and get your money back.

"FLOOD" starts instant circulation with the first turn of the motor. Its powerful suction-screw propeller empties a radiator-full of cooled water through your motor once every minute at a car speed of 20 miles an hour.

Order a "FLOOD" now, giving name of your local dealer. Use it for 10 days. If not satisfied simply return it and your money will be promptly refunded. Or if you desire more information ask for our descriptive folder. Installed in 20 minutes and you can do it yourself. Fits any year model Ford made since 1916; is furnished with oil-proof belt.

LUTHER GRINDER MANUFACTURING CO.
291 S. Water Street, Milwaukee, Wisconsin

DEALERS and JOBBERS—Announced scarcely over 60 days ago
"FLOOD" is already a giant. Write today for our liberal, attractive plan.



CLIP THIS COUPON
AND MAIL TODAY

Complete and Ready to Install **\$5⁰⁰**

Luther Grinder Mfg. Co.

291 S. Water Street, Milwaukee, Wis.

Gentlemen: Enclosed find \$5.00 for which send me one "FLOOD" Pump for Ford. It is understood that in case I am not entirely satisfied by the end of the 10-day trial period I may write you for shipping instructions and you are to refund to the full purchase price of \$5.00.

Name.....

Town.....

Street No.....State.....



Oh!

As I stepped up to the lonesome lady in the hotel lobby, I inquired: "Are you looking for a particular person?"

"I'm satisfied," she said, "if you are."
—Frvivol.



Prevent Misunderstanding

"Why do you always stand out by your front gate when your wife sings?"

"Oh, I just wish to be where my neighbors can see me, so there will not be any misapprehension as to what's happening in my house."—*Vancouver Province.*



Food for Reflection

"Are caterpillars good to eat?" asked little Tommy at the dinner table.

"No," said his father; "what makes you ask a question like that while we are eating?"

"You had one on your lettuce, but it's gone now," replied Tommy.



Between Two Fires

Casey—"Now, phwat wud ye do in a case loike that?"

Clancy—"Loike phwat?"

Casey—"Th' walkin' diligate tills me to stroike, and me ould woman orders me to kape on workin'."



Seeing Is Believing

Bob Steel was on a steamer leaving the harbor of Athens when a well-dressed young passenger approached the captain, and pointing to the distant hills, inquired, "What is that white stuff on the hills, captain?" "That is snow," replied the captain. "Well," remarked the lady, "I thought so myself, but a gentleman has just told me it was Greece."



A Narrow Escape

The Irishman said, "The bullet went in me chist here, and came out me back."
"But," said the friend, "it would have gone thru your heart and killed you."

"Me heart was in me mouth at the time," said the Irishman.—*The Christian Intelligencer.*



Overworked

"How hoarse you are this morning."
"Yes, my husband got home very late last night."

JUNE,
1922

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20 CENTS
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FARM MECHANICS

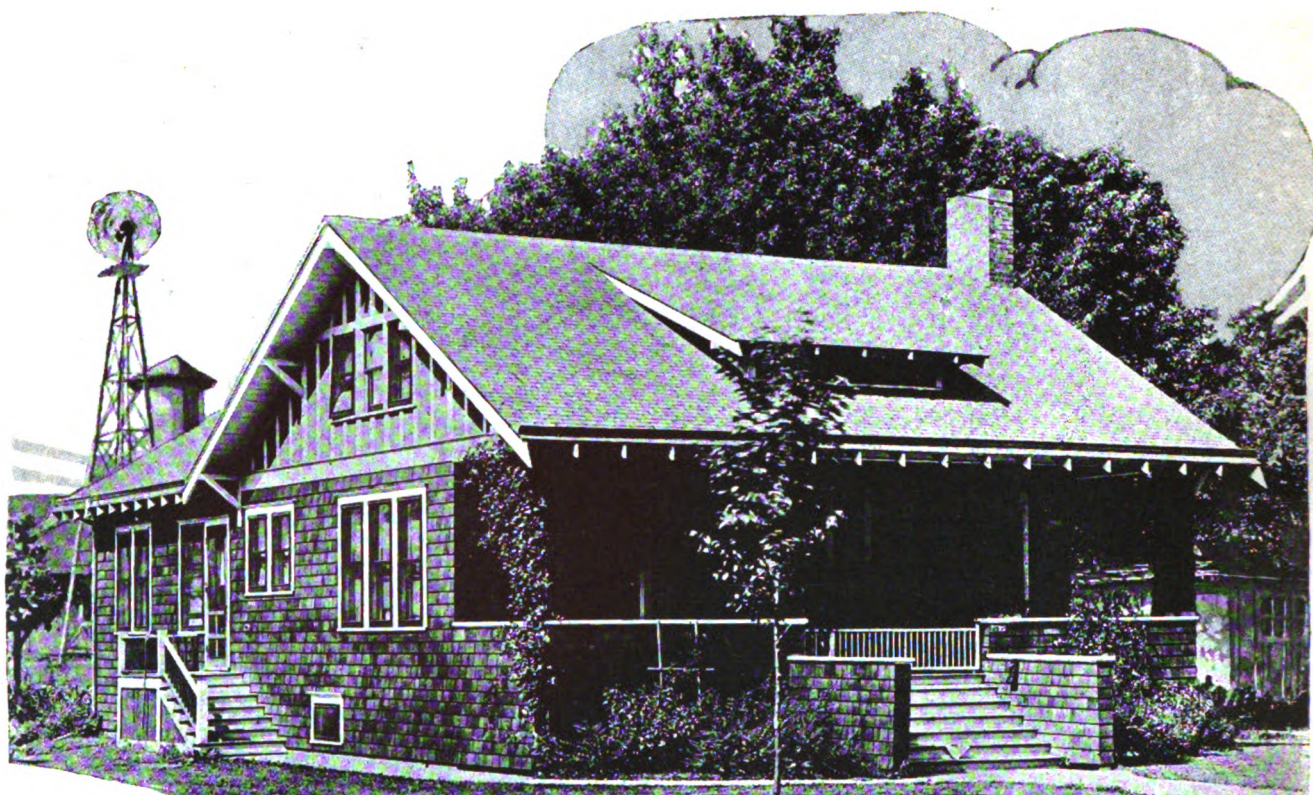
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A Monthly Magazine Featuring Farm Improvements
Machinery, Equipment, Farm Buildings



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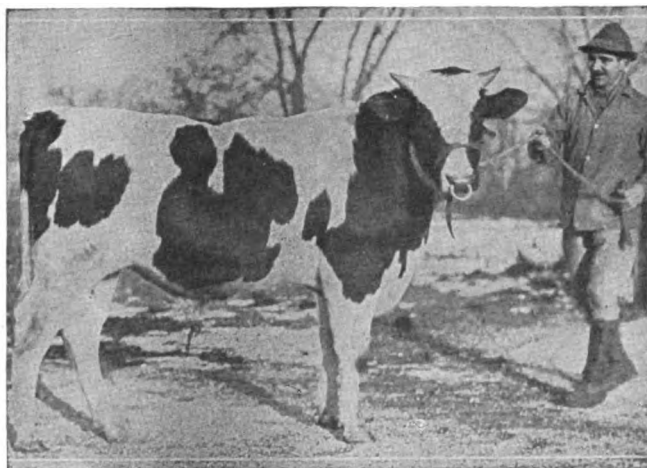
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Pabst Creator

Born December 19, 1921

A son of Creator and a grandson of King Pontiac Champion, sold for \$3,500 at the Brentwood Sale, while the average price per animal was \$800.

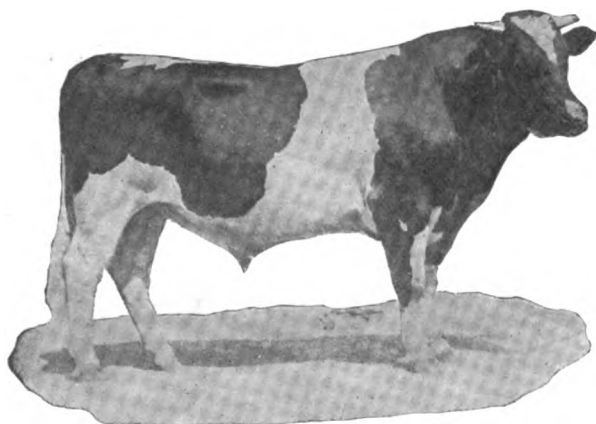
Creator's sons and daughters, all from daughters and granddaughters of King Pontiac Champion, are outstanding individuals. They will bring the best of the Holstein blood lines to your herd.

Write now for sales list describing a son of Creator from a Champion dam.

Pabst Stock Farms

Waukesha County
OCONOMOWOC,
WISCONSIN

Federal Supervision



CREATOR

Born Jan. 3, 1917

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FARM MECHANICS

MONTHLY FARM MAGAZINE ON TRACTORS
FARM MACHINERY, BUILDING IMPROVEMENTS AND
MODERN AGRICULTURE

Member of Audit Bureau of Circulations

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June, 1922

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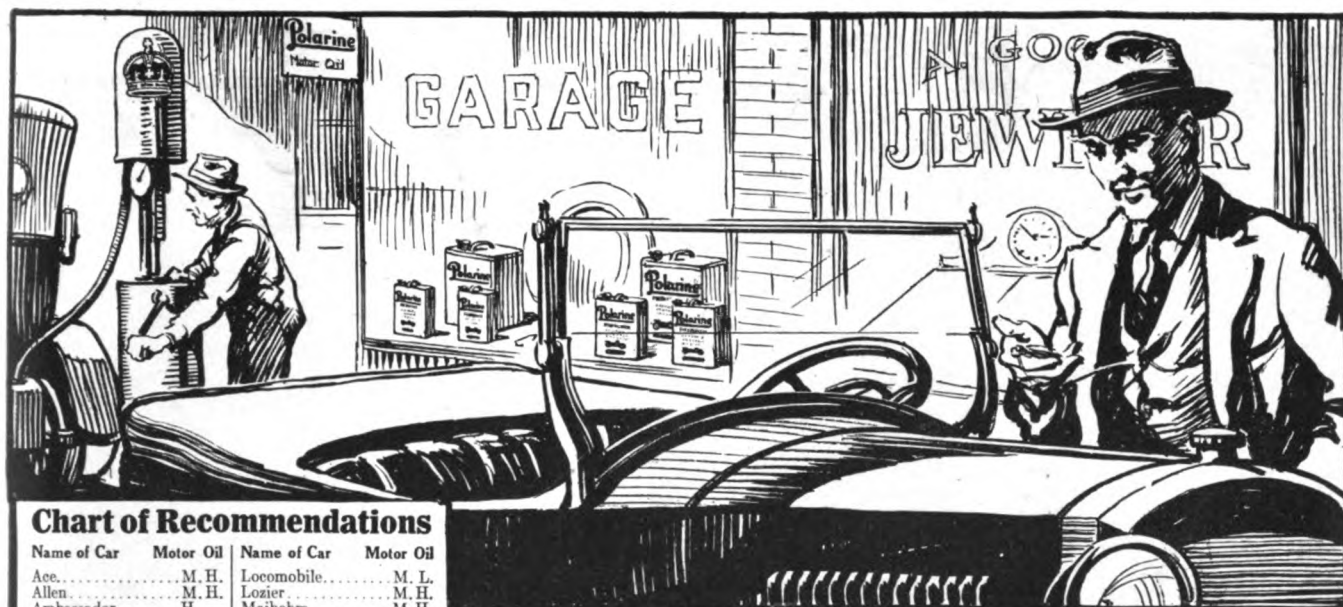


Chart of Recommendations

Name of Car	Motor Oil	Name of Car	Motor Oil
Ace.....	M. H.	Locomobile.....	M. L.
Allen.....	M. H.	Lozier.....	M. H.
Ambassador.....	H.	Maibohm.....	M. H.
American Six.....	M. H.	Marion Handley—	
Anderson.....	M. L.	(Cont. Motor).....	M. H.
Apperson Road'pl.....	H.	(Knight Motor).....	H.
Auburn.....	M. L.	Marmion 34.....	H.
Austin H. King.....	M. H.	Martin Wasp.....	H.
Bay State.....	M. L.	Maxwell.....	M. L.
Beggs.....	M. L.	Merced.....	H.
Biddle.....	M. L.	McFarlan Six.....	M. H.
Birch.....	M. H.	Mitchell.....	M. H.
Bradley.....	M. L.	Moline Knight.....	H.
Brewster.....	M. L.	Monitor.....	M. L.
Briscoe.....	M. H.	Monroe.....	H.
Brook.....	M. H.	Moon.....	M. L.
Buick.....	M. H.	Moore.....	M. L.
Bush.....	M. H.	Nash.....	M. H.
Cadillac.....	M. H.	National.....	M. H.
Case.....	M. L.	Nelson.....	M. H.
Chalmers.....	M. H.	Nelson & Le Moon.....	M. H.
Chandler.....	M. H.	Northway.....	M. H.
Chevrolet.....	M. L.	Oakland.....	M. H.
Classic.....	M. H.	Oldsmobile 6.....	M. H.
Cleveland.....	M. H.	Oldsmobile 8.....	M. H.
Cole 8.....	M. H.	Olympian.....	M. H.
Colonial.....	M. H.	Overland.....	M. L.
Columbia.....	M. H.	Owen Magnetic.....	M. H.
Comet.....	M. L.	Packard.....	M. H.
Commonwealth.....	M. L.	Paige.....	M. H.
Crawford.....	M. H.	Pan-American.....	M. H.
Crow-Elkhart.....	M. H.	Parenti.....	M. H.
Cunningham.....	M. H.	Patterson.....	M. H.
Daniels.....	M. H.	Peerless.....	M. H.
Davis.....	M. L.	Piedmont.....	M. L.
Dispatch.....	M. L.	Pierce-Arrow.....	M. H.
Dixie Flyer.....	M. H.	Pilot.....	M. H.
Dodge.....	M. H.	Premier.....	H.
Dorris.....	M. H.	Preston.....	M. H.
Dort.....	M. L.	Regal.....	M. L.
Durant.....	M. H.	Reo.....	M. H.
Dusenbergl.....	H.	Revere.....	H.
Earl.....	M. H.	Richlieu.....	H.
Economy.....	M. L.	Rickenbacker.....	M. H.
Elcar.....	M. L.	Roamer.....	
Elgin.....	M. H.	(Cont. Motor).....	M. H.
Essex.....	M. H.	(Dusenbergl Motor).....	H.
Ferris.....	M. L.	Rolls Royce.....	M. H.
F. I. A. T.....	H.	R. & V. Knight.....	H.
Ford.....	M. L.	Saxon.....	M. H.
Fox.....	H.	Sayers.....	M. L.
Franklin.....	M. H.	Scripps Booth.....	M. H.
Gardner.....	M. L.	Sheridan.....	M. H.
Glide.....	M. H.	Simplex.....	H.
Grant.....	M. H.	Singer.....	H.
Gray.....	M. H.	Spacke.....	E. H.
Hackett.....	M. H.	Sperling.....	M. H.
Hal Twelve.....	M. H.	Standard.....	M. H.
Halladay.....	M. H.	Stanwood.....	M. L.
Handley-Knight.....	H.	Stearns Knight.....	H.
Hanson.....	M. H.	Stephens Six.....	M. H.
Harroun.....	M. H.	Stevens.....	M. H.
Hatfield.....	M. H.	Stevens Duryea.....	M. H.
Haynes.....	M. H.	Sterling Knight.....	H.
Haynes 75.....	H.	Studebaker.....	M. L.
H. C. S.....	M. H.	Stutz.....	H.
Holmes.....	H.	Sun.....	H.
Hudson.....	M. H.	Templar.....	H.
Huffman.....	M. L.	Vellie.....	M. H.
Hupmobile.....	M. H.	Westcott.....	M. L.
Jackson.....	M. H.	White.....	M. H.
Jacquet.....	H.	Wills St. Claire.....	H.
Jordan.....	M. L.	Willys-Knight.....	H.
Kelsey.....	M. L.	Winther.....	M. H.
King.....	M. L.	Winton Six.....	M. H.
Kissel Kar.....	M. H.		
Kline Kar.....	M. L.		
Lafayette.....	M. H.		
Leach.....	M. L.		
Lexington.....	M. H.		
Lincoln.....	M. H.		
Liberty.....	M. L.		

KEY

M. L.—Polarine Medium
Light
M. H.—Polarine Medium
Heavy
H.—Polarine Heavy
E. H.—Polarine Extra
Heavy

N. B. For recommendation of grades to use in tractors, consult chart in any Standard Oil Co. (Indiana) station.

More Than a Jeweler's Care for Your Car

YOUR watch goes to a careful jeweler for its periodic cleaning and oiling—to one who has made a life study of its delicate parts. It would never occur to you to oil this valuable machine from the family oil can on the pantry shelf. Are you as careful about the lubrication of your automobile? It is quite as important.

Because the automobile is large and heavy, do not jump to the conclusion that you can afford to give it a lesser degree of care. Keep in mind that the clearance of the crank shaft bearings is less than 1-1000 of an inch! That the total life of a bearing, and the time elapsing between bearing adjustments depend to a large degree upon the quality of the lubricant used.

Consider, too, that the distance between the wall of the piston and the wall of the cylinder is but equal to the thickness of a thin sheet of paper! If the oil be too thin, it will not hold the moving bodies apart. If too thick, it will not flow properly—and scored cylinders mean an expense easily avoided.

Use Polarine

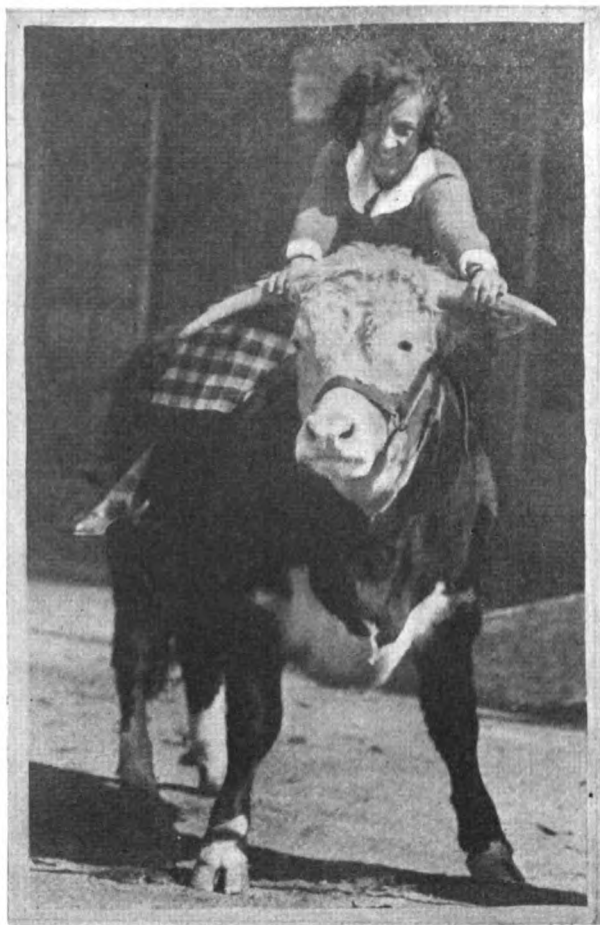
THE PERFECT MOTOR OIL

Made In Four Grades Seals Pistons Against Loss of Power

The grade specified in the chart as correct for your particular make of car will reduce friction to a minimum, reduce your repair bills to a minimum, give the longest life to your engine, and will also increase the mileage per gallon of gasoline.

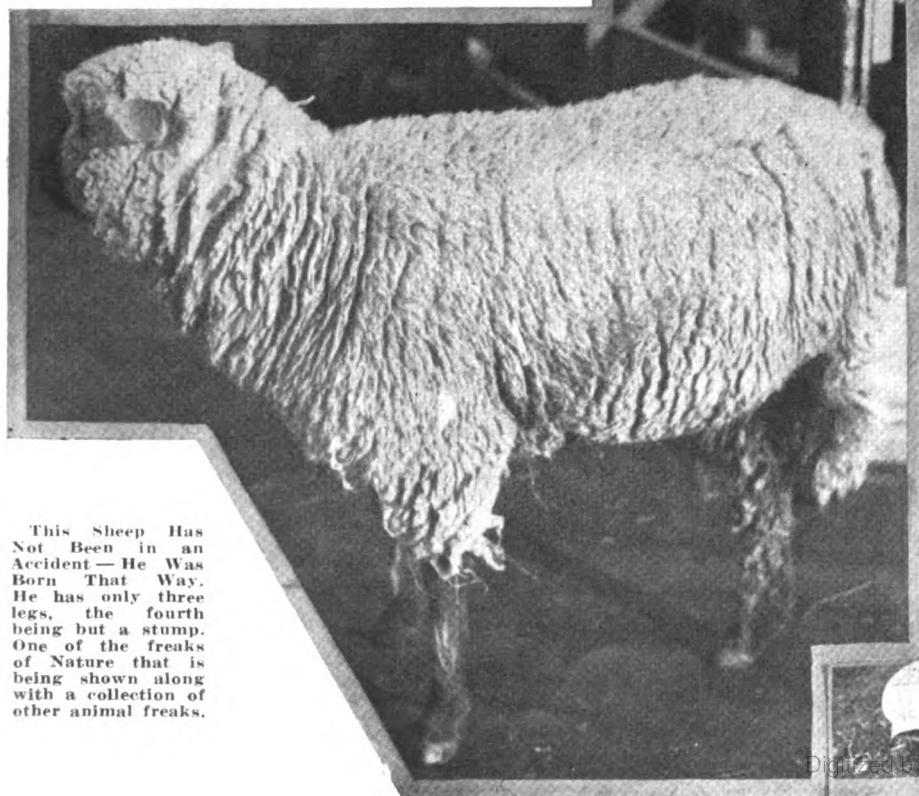
The Standard Oil Company (Indiana) recognizes the fact that one of the most essential products of petroleum is lubricating oil. In no sense of the word is lubricating oil a by-product. Petroleum chemists of world-wide recognition are spending their entire time and thought in perfecting the various grades of Polarine manufactured by the Standard Oil Company (Indiana). For your car specify Polarine (The Perfect Motor Oil) in the grade indicated in the chart to the left.

Standard Oil Co., 910 So. Michigan Ave., Chicago
(Indiana)



This "Whiteface" is an Accommodating Animal, as Well He Might Be, Considering His Burden. This young woman created considerable of a sensation when she rode thru the streets of Chicago near the stockyards on this animal.

No, Children, This Lion Cub Is Not Crying—He's Laughing. This California woman has two youngsters that she has tamed and they enjoy her attentions. The expression shown on the cub's face is secured by tickling his stomach.



This Sheep Has Not Been in an Accident—He Was Born That Way. He has only three legs, the fourth being but a stump. One of the freaks of Nature that is being shown along with a collection of other animal freaks.

Just Pups and a Little Girl in the Picture Below. They are cute—the pups and the girl—which is the excuse for reproducing the photograph.





"MILCOR"

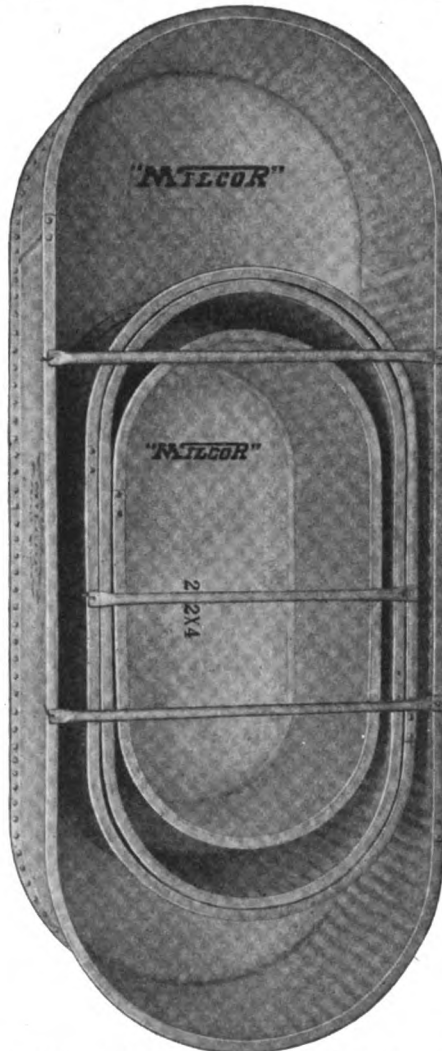
Quality Farm Specialties



"Milcor" Thermo Drinking Fountain
Non-Freezing—Keeps Water Cool
in Summer



Front View "Daylight" Win-
dow, Stationary or with
Ventilating Attachment



"Milcor" Corrugated Steel Stock Tanks
All sizes. Made in round and round end styles
Corrugations prevent damage in zero weather

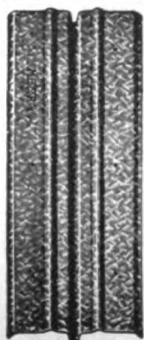


"Milcor" Barn Ventilator
All Steel Base



"Milcor" Chicken Brooder

Hardware and Lumber Dealers
Can Supply You



"Milcor" Style V
Barn Battens

Branch Office
and Factory at
Kansas City,
Mo.



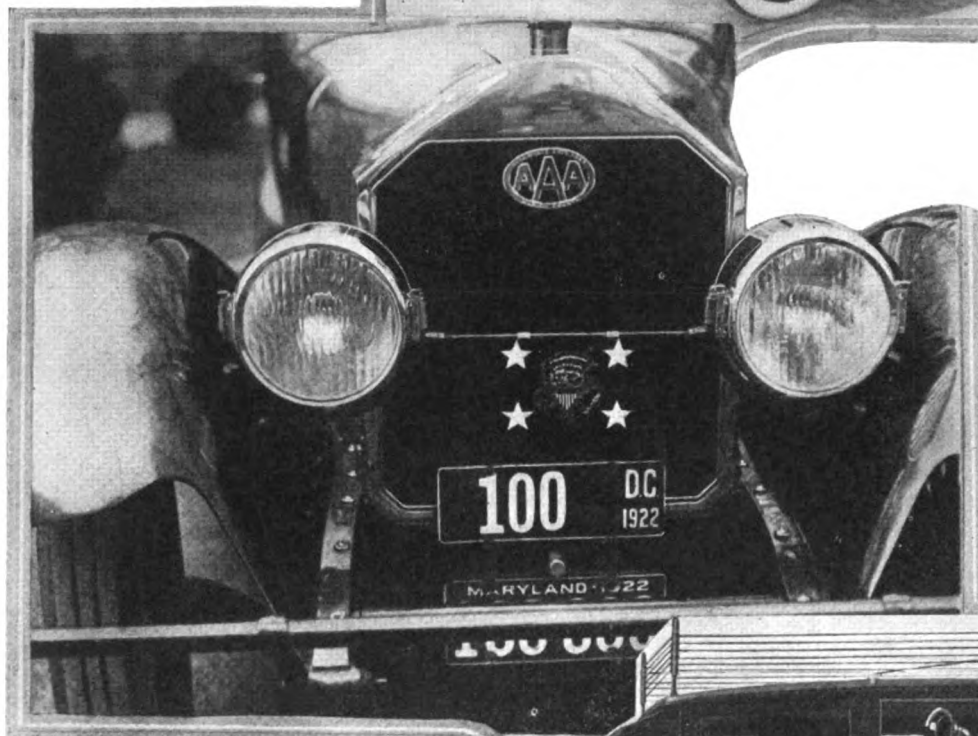
"Milcor" One-Piece Hog Trough. Pat. Oct. 17, 1920
Will not tip. Very strong. Center leg on larger sizes

**MILWAUKEE
CORRUGATING
COMPANY**

MILWAUKEE, WIS.

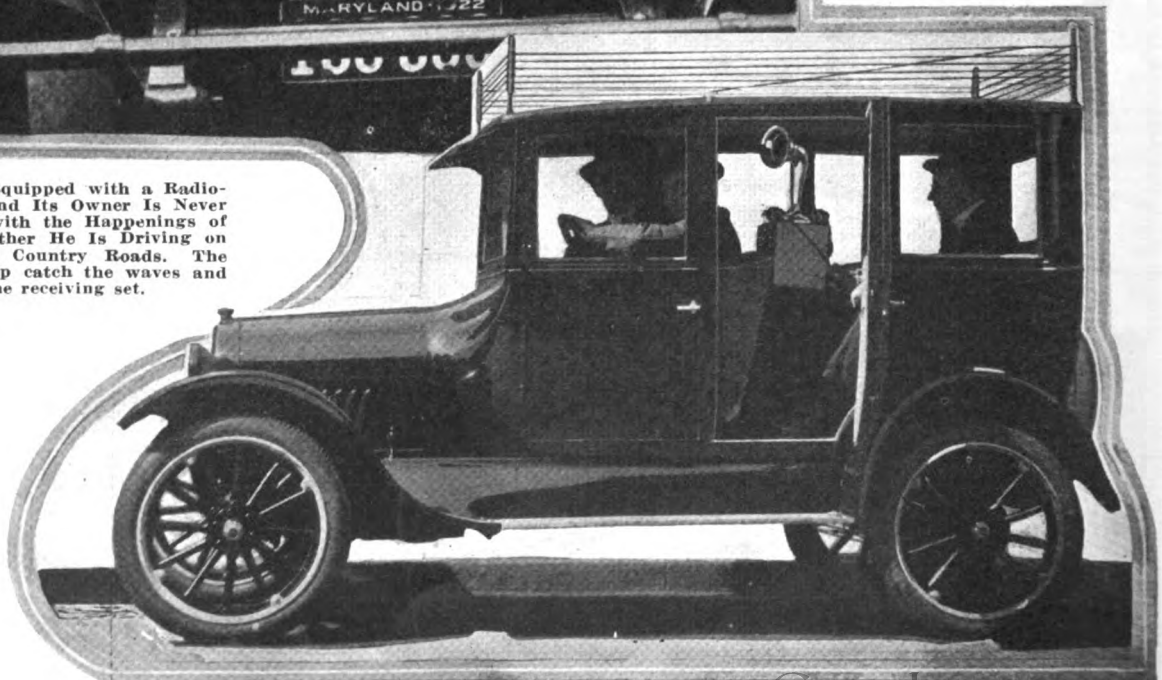


Those Who Fought the "Battle of Paris" Know That One of Their Chief Sources of Exercise Was Dodging Taxis, the French Drivers Having Little Respect for Pedestrians. Here is a new type of taxicab, modelled after the old-fashioned hansom cab. One guess as to who makes this cab.



There Is Only One Man in the United States Who Has a Right to Have This Insignia Shown on the Radiator of His Automobile. This is a head-on view of President Harding's car, the four stars denoting that he is commander-in-chief of the army and navy of the United States.

This Car Is Equipped with a Radio-Receiving Set and Its Owner Is Never Out of Touch with the Happenings of the World, whether He Is Driving on City Streets or Country Roads. The wires on the top catch the waves and carry them to the receiving set.





Quality leaves its imprint

Cheapness for cheapness' sake has no place in the business policies of the Richards-Wilcox Manufacturing Company. Rather, this institution serves through giving maximum quality at a fair price.

Hardware for the Farm

R-W Barn Door Hangers

Easy running, long-wearing hangers for every type of barn door.

R-W Farm Grindstones

Ball-bearing, steel-frame grindstones made especially for farm use. There are many styles to choose from. Operated by hand or foot.

"Slidetite" Garage Hardware

The original sliding-folding garage door hardware. Suitable for openings up to 30 feet wide. Doors will never stick or sag. Always weather-tight.

Vanishing Door Hardware

House doors hung on this hardware slide instead of swing. They are great space savers and will never stick. Use them when you build or remodel.

Air-Way Window Hardware

Will make a sun room or sleeping porch of any room. The windows fold back out of the way—no interference with screens or draperies. Absolutely weathertight.

Sold by Hardware Dealers Everywhere

That's why R-W hardware is to be found on thousands of farms from Maine to California. Because of the lasting satisfaction which it gives, it is rapidly becoming the preferred hardware of the American farmer.

There are two outstanding reasons for this widespread popularity—the genuine merit of R-W hardware and the willingness of satisfied users to recommend it to their friends. Every sale of R-W hardware soon leads to another through the word-of-mouth advertising that it receives.

Our trade-mark identifies every piece of hardware manufactured by us. This trade-mark guards you against imitations and constitutes a guarantee, by Richard-Wilcox, of entire satisfaction. For your own protection, be sure to look for it when you buy.

Richards-Wilcox Mfg. Co.

A Hanger for any Door that Slides

AURORA, ILLINOIS, U.S.A.

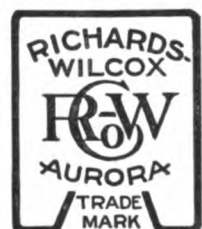
Minneapolis
Philadelphia

Chicago
Boston
Winnipeg

New York
St. Louis

Cleveland
Indianapolis
CO. 19
Montreal

Los Angeles
San Francisco

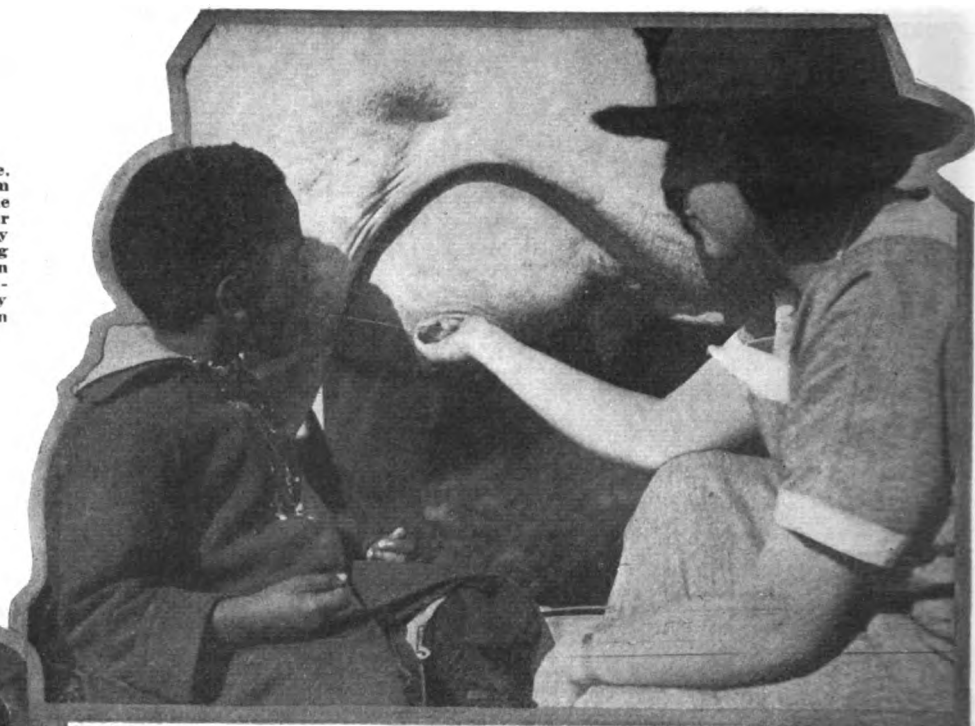


R-W hardware is in use on every one of the "Notable Farms" so far featured by Farm Mechanics.

Quality leaves its imprint

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The Middleman Gets No Chance Here, as the Milk Is Flowing Direct from Producer to Consumer, Aided by the Expert Services of This Volunteer Milkmaid. Note the look of expectancy on the face of the youth who is getting nourishment, and the strict attention to duty that the young woman is giving. Even so, her aim is not so steady as it might be, as the target has been missed.



Goats Make Good Playmates for the Youngsters as Will Be Seen by the Picture at the Left. This is one of the delights of living in the country, for what youngster in the city has parents who would let him have the joys of a goat to ride.



Listening to the Bedtime Stories a Delight in Those Homes That Are Equipped with a Radio Receiving Set. Broadcasting stations, or most of them, send out a story for the youngsters early in the evening and the children enjoy them, as this youngster is doing.



Speed Is What the Younger Generation Wants and Gets. This speedster is geared so the rider goes at a merry clip and gets from here to there in no time at all. This is a development of the pushcart that most youngsters make at some time in their young lives.

Ask for a Ford-Size Willard Battery

Every Willard Battery, Ford-size or otherwise—is built to give *you*, the car owner, uninterrupted battery service at the *lowest possible cost*, measured either in months or miles. The Ford-size Willard is no different—it's a regular Willard except for size.

In the Ford size there's the Willard Wood Separator Battery which has served thousands of car owners well for many years;—the improved Willard Threaded Rubber Battery, selected as standard original equipment by 196 manufacturers of cars and trucks; and the Willard All-Rubber Battery which employs tough, wear-resisting, acid-proof *rubber* in place of wood in the case as well as the insulation—ideal for hard Ford Service! Prices will please you, too!

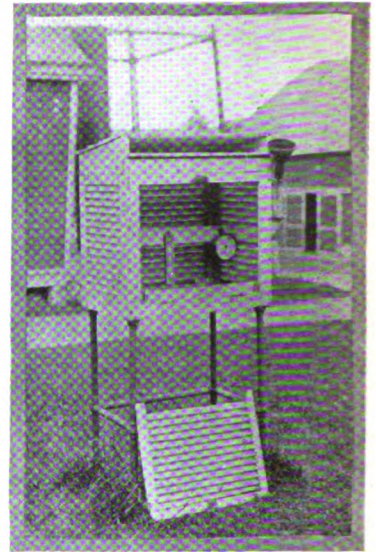
WILLARD STORAGE BATTERY COMPANY, Cleveland, Ohio

Made in Canada by the Willard Storage Battery Company of Canada, Limited, Toronto, Ontario



While Persons Whose Hearing Is Normal Often-times Have Difficulty in Hearing Over the Telephone, This Young Woman Has No Such Trouble. Even Tho She Is Deaf. Practice and an acute sense of feel in her fingers enable her to understand conversation thru the vibrations of the metal disc in the receiver.

Many Farmers Nowadays Are Receiving Weather Reports by Radio-Telephone. An Illinois farmer, however, has installed the instruments used by weather forecasters in his yard and each day can tell, as well as the experts, what to expect, and gauge his farm operations.



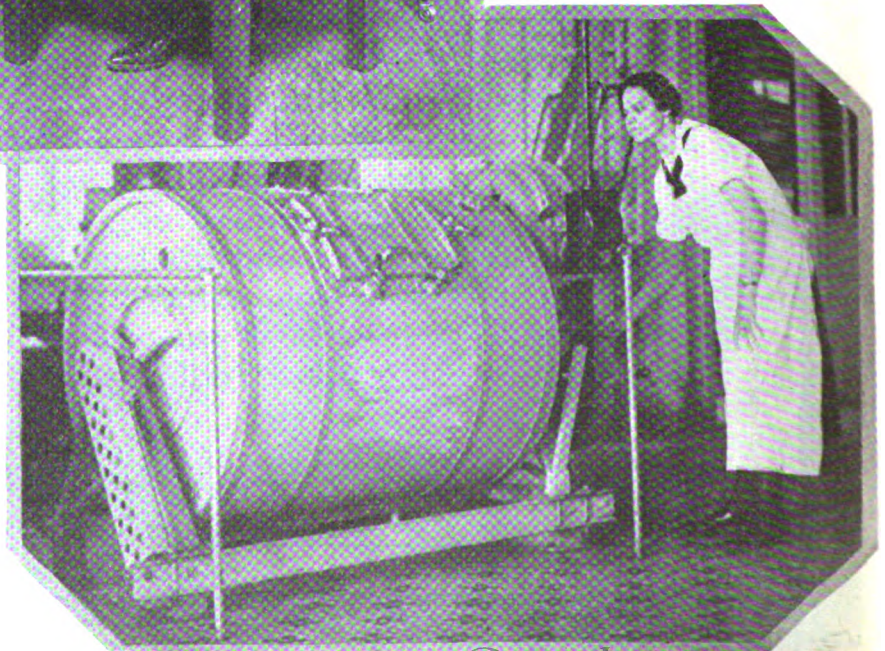
The young woman seated at the typewriter is Miss Willfred Wheaton, of New Haven, Conn., the champion typist of New England. In a recent contest Miss Wheaton wrote 71 words a minute for 15 consecutive minutes, which means that she wrote more than a word every time a watch ticked. When it is considered that the average public speaker only utters about 60 words a minute, Miss Wheaton's feat is better understood.



Below We Have the Modern Dairymaid, Who Depends on Science To Produce the Best Quality Butter. She is Miss Emily Gray, of Philadelphia, Pa., who won a scholarship at Penn State College, where she graduated after taking a straight course in dairying.



This Young Woman Is Gathering "Latex," as the Fluid from the Rubber Tree Is Called Before It Has Been Treated and the Crude Rubber Extracted. It is an art to cut the diagonal slits in the bark of the tree, so that the sap will flow and the tree will be unharmed, and women of the East Indies and South America excell the men in this work.



The Work of the Month

TOWARD the latter part of June the grain begins to show yellow, warning that harvest time is near. The grain binder and threshing outfit will be needed soon and it is best to go over the machinery in advance to see that it is in condition for service.

THE haying machines will be getting into action within a short time. Look them over and see that they are in good working order, so that the work may be done without interruption.

BUSY days are in store for the housewife, as it is the beginning of the canning season. Strawberries, cherries and other small fruits will be coming along soon, and the more that can be conserved by canning and drying the better for all members of the household. Fruits should be a prominent part of the diet of the family, and in the absence of fresh fruits the canned varieties help out.

FIGHT the flies. Destroy their breeding places and keep them out of the house, and especially from food. Flies carry disease and the battle against the pests is worth while.

LAMBS that are to be marketed should not be held until the weather reaches the maximum of summer heat. Experiments at the University of Kentucky show that lambs make their greatest growth in May and June, while the gain in July is negligible. Sold before the heat becomes too great there is less danger from parasites that often cause heavy losses.

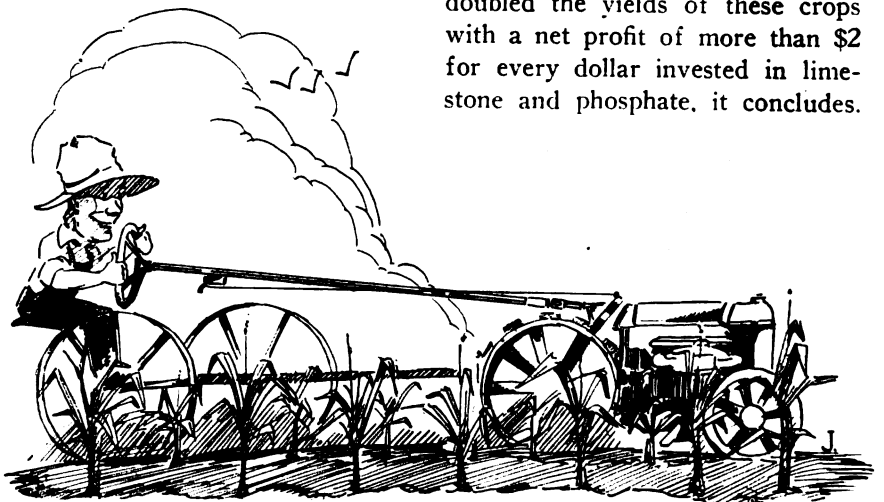
BROODY hens cut down the egg production at this season of the year. The more quickly a hen that wants to sit is placed in a broody coop the better, as each day she is allowed to stay on the nest after she has ceased laying requires two or three days' confinement to make her forget her desire. A hen

that is persistently broody should be sent to market.

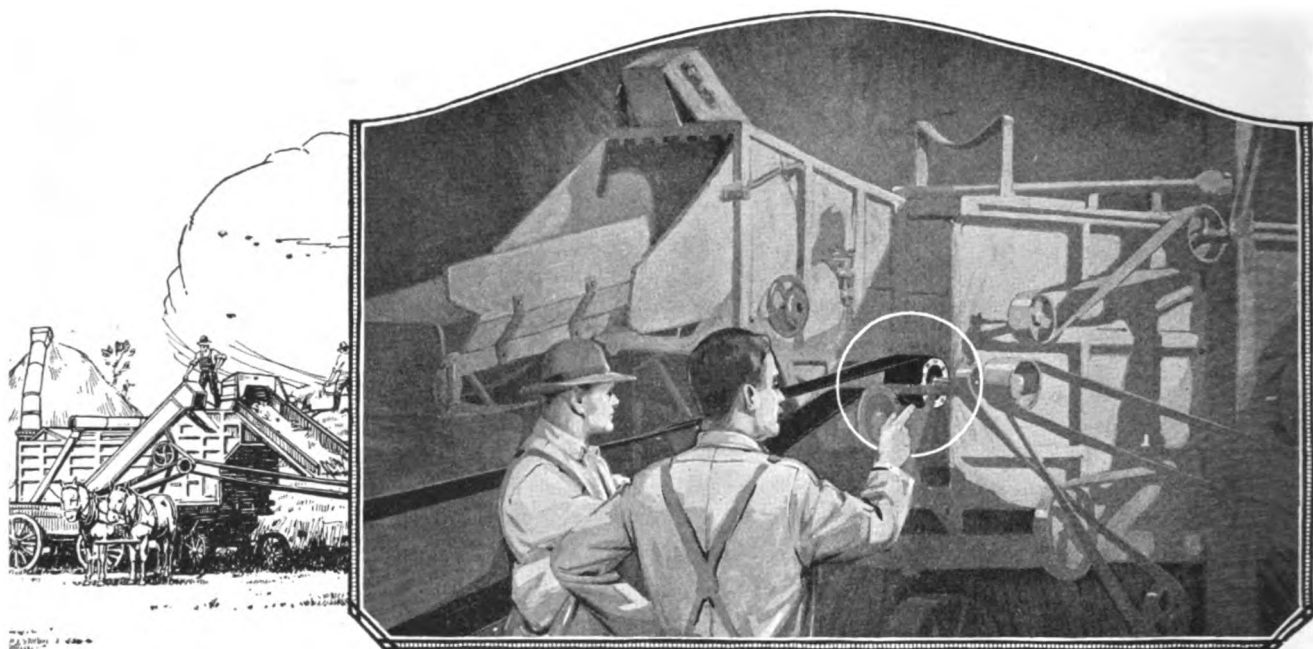
INNOCULATE the spring pigs with anti-hog cholera serum and cholera virus before the weather gets too warm. Animal husbandry specialists predict that this year will be a year of violent cholera outbreaks and advise that the double immunizing process be used before the disease gets a start.

JUNE is the month of cultivation. Row crops now have a good start and will do their best if they are kept mulched with dust so that the moisture will be retained in the soil and the surface kept from baking and cracking. Weeds do not have a chance to start, and when harvest time for the small grains comes, the necessary neglect of the row crops will not work to their detriment.

THE use of limestone and acid phosphate on the Kentucky Agricultural Experiment Station soil fertility fields located on the acid soils of the state has resulted in the corn yield being increased 14.6 bushels, the wheat yield 7.6 bushels, that of soybean hay 1,337 pounds and that of clover hay 2,021 pounds, according to the circular. This fertilizer treatment has practically doubled the yields of these crops with a net profit of more than \$2 for every dollar invested in limestone and phosphate, it concludes.

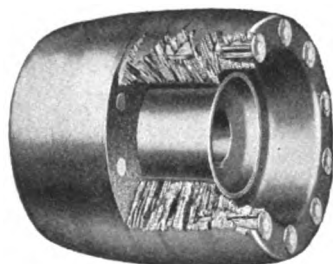


Cultivate Early and Often and as Long as Possible—Better and Bigger Crops Will Be the Reward.



"I'm putting that pulley on on all my old machines"

Why Don't You Get This Business, Mr. Dealer?



[Section removed to show construction]

ROCKWOOD *The DRIVE PULLEY*

ROCKWOOD, *The Drive Pulley*, consists of a solid block of tough, wear-resisting fiber (seldom less than two inches thick) built around and into a heavy cast iron hub. The end grain is exposed as a surface to grip the belt surely and firmly—a surface made up of layer upon layer of fiber hydraulically compressed and cemented—a surface that renews itself automatically as it wears and **WEARS**.

Rockwood, *The Drive Pulley*, has no "cover" to strip. It is ALL pulley, and is thoroughly waterproofed.

MANY TRACTORS and more than half the threshing machines manufactured today are factory-equipped with Rockwood, *The Drive Pulley*. But there are a lot of old machines out—tractors, separators, silo fillers, hullers, shredders—which should be Rockwood-equipped. Why don't you get this business? You can have it—with very little effort.

All through the year, Rockwood, *The Drive Pulley* will make money for you. Farmers, threshermen—in fact, all owners of belt-driven machinery are prospects. These men are constantly changing pulley sizes or buying replacements for their old pulleys. And they'll gladly buy this BETTER pulley of you. Write today for details of our dealer's proposition.

THE ROCKWOOD MANUFACTURING CO.
1950 English Ave. Indianapolis, U. S. A.

All the Power—All the Time

ROCKWOOD, PULLEY SERVICE



Bouquets of Beautiful Flowers

REMEMBER how in the April issue we asked our readers to send in suggestions and criticisms of FARM MECHANICS. Well, they responded, hundreds of them. Letters came from all parts of the country, and out of the whole lot there was only one who criticised. He said that "FARM MECHANICS does not interest me, altho it is an attractive magazine."

But the others! They ranged from "it suits me" and "it's splendid" to those who were most enthusiastic, one man declaring that "every copy is worth \$1," while another expresses the conviction that "FARM MECHANICS should be in every farm home."

All of which is very gratifying—very gratifying, indeed. We know what we have been trying to do with FARM MECHANICS, and have hoped that we were doing it. Now we're pretty certain that our editorial policy is a good one, for FARM MECHANICS has so impressed many of its readers that they go to the trouble of writing us letters and telling us so. And every one knows that writing a letter is a job that lots of folks "would rather do anything else but."

Suggestions? Sure. There were lots of them. Some wanted more of what they are getting on various subjects; others suggested new subjects. Why, one man asked us to "have the U. S. Senate quit trying to buy a man's vote by sending out worthless garden seeds."

By high pressure methods it is not a difficult matter to get people to subscribe for publications. The test, however, is "do they read them after they are delivered to their homes?"

FARM MECHANICS is read. One man writes to tell us that he "reads it from cover to cover and always finds much of interest and value." Another says "the magazine has been very inspiring to me and the whole family. We hail its coming."

Space does not permit us to reproduce even excerpts from all these letters that our readers have sent us. They were all helpful, however, and are a great stimulant

to harder work and greater care in the selection of the material for the pages of FARM MECHANICS.

Our one hope is that we may so perform our daily work that we will continue to bring help and pleasure into the homes where FARM MECHANICS is a monthly visitor.



When You Build, Build Well

"IN barn building there is one thing above all others worth remembering," says R. L. Patty, specialist in agriculture engineering at the South Dakota Agricultural College, "and that is that your building is no stronger than the weakest joint in it. Architects know that every joint of the self-supporting roof of the plank barn frame should be tied together with braces and well bolted. Beware of the frame designed by a man who has not figured the wind and snow load on it. And beware of the carpenter who scoffs at the standard architect's frame. This frame is figured with a uniform strength so that one 'link' is as strong as another. It doesn't pay to save \$30 in bracing on a roof that fails in 20 to 25 years when it could be made to stand 40 or 50 years or more for the extra money."



THE amateur can usually do more good on the gas engine or tractor with an oil can than with a monkey wrench.



FEED a cow all the roughage she will eat.



Haying Time Is Not Such a Tough Job as It Used to Be; Modern Hay Machinery and Tools Have Lightened It.

Gypsying With All Conveniences

Modern Equipment Installed in Motor Truck Provides the Present-day Nomad With Home Comforts, Even Electric Lights

By F. J. ST. JOHN

ONCE, when I was a small boy, a band of gypsies camped for almost a week in the woods at a corner of our farm. They had a number of brightly painted wagons, real homes on wheels, with lace-curtained windows and a good many conveniences which I had never before realized could be enjoyed by folks who traveled around the country as gypsies did—and still do, I believe.

I spent a good many hours, during their stay, around the gypsy camp, drawn by the glamor of the evening camp fire, and of the freedom which they seemed generally to be enjoying.

Before they left, I had made up my mind to be a gypsy. There was a little, dark-eyed gypsy girl with them—but that's another story.

My family not unnaturally overruled my plans for taking up a nomadic life and joked me mildly about the gypsy playmate who, they pretended to believe, was responsible for my desire to leave the family roof-tree and the ordered life of the old farm.

I didn't try to analyze my longing then, but after a while I came to feel that the urge I felt was just a call of the sort that comes to most of us at times, a call to get out, away from the old surroundings and from the established routine—in short, to go a-gypsying.

Perhaps you feel, sometimes, the restlessness that

beckons you away from beaten paths toward the gypsy trail. Perhaps the view from your front door wearies you and you feel that you must get away from the same old scenery that has shut in the home place, north, east, south and west, as long as you can remember.

Well, why not go a-gypsying—de luxe—after the fashion that others are adopting in these modern times?

Going a-gypsying, you know, means taking some means of transportation and then just seeking pleasant places, in more or less leisurely fashion, living upon the fruits of the land thru which you are traveling, chatting with the people thru whose lands you are traveling, drinking in the joys that traveling thru those lands affords and rejoicing in all the glorious sights and sounds and experiences that belong to the great outdoors.

There are fast-growing thousands that go traveling every open season, most of them by motor car—many of them moving too fast to really see the country thru which they go hurrying. Your true gypsy doesn't hurry. Why should he? He doesn't set out to go to some place, from some other place. Because he is no more at home when he gets there than he was when he started, for his home has traveled with him, all the way. He just travels and enjoys the outdoors and



"The Madjim," the Sweeney's Moving Home, Which Is Equipped with All the Modern Conveniences. The name is a combination of those of the two Sweeney children, Madelyn and James.

the new sights and sounds. Life offers considerable variety to the gypsy and to all who essay to follow the gypsy trail—if they just take their time.

The other day I saw a house on wheels, that set me to thinking. It was a delightful thing to look at—this house on wheels—even from the standpoint of the nicety of its construction, its completeness and general attractiveness. It wasn't a gypsy who had designed and fitted it out, either, but a clever business man, M. Sweeney, of New Rochelle, N. Y., and Indianapolis, Ind., who wanted, it seems, to see America, taking his time about it and living in a comfortable house at the same time.

So he secured a good, stout truck chassis and built on it a roomy body, 28 feet long by 7 feet wide. In this he arranged the home that the truck was to carry. His idea of a home was one which had all the modern conveniences to which he was accustomed in the fixed, permanent residence where he and his family ordinarily lived.

He secured the truck in the vicinity of Indianapolis. In that city he proceeded to make this traveling home as complete as his taste and his means would permit. Like the builder of any home, anywhere, he realized that electricity and running water would form the basis of most of the modern comforts he expected to enjoy while on the road.

Electricity he secured by installing, under the floor of the truck, well forward, a modern electric light and power plant. Electric lights were placed all about the interior, wherever light would be needed, also on the outside of the truck, as on the observation platform at the rear. The living room and the kitchen compartment were equipped with a number of lights, conveniently placed. An electric water system was also installed, so that there is water under pressure. The heat of the exhaust pipe from the electric plant he utilized to heat the water for the hot water faucets and for the shower bath in the tiny bathroom.

Disappearing twin beds, on the observation platform, couches and a cleverly unfolding driver's seat, afford comfortable sleeping places for seven persons aboard the truck. The living room, in the daytime, is

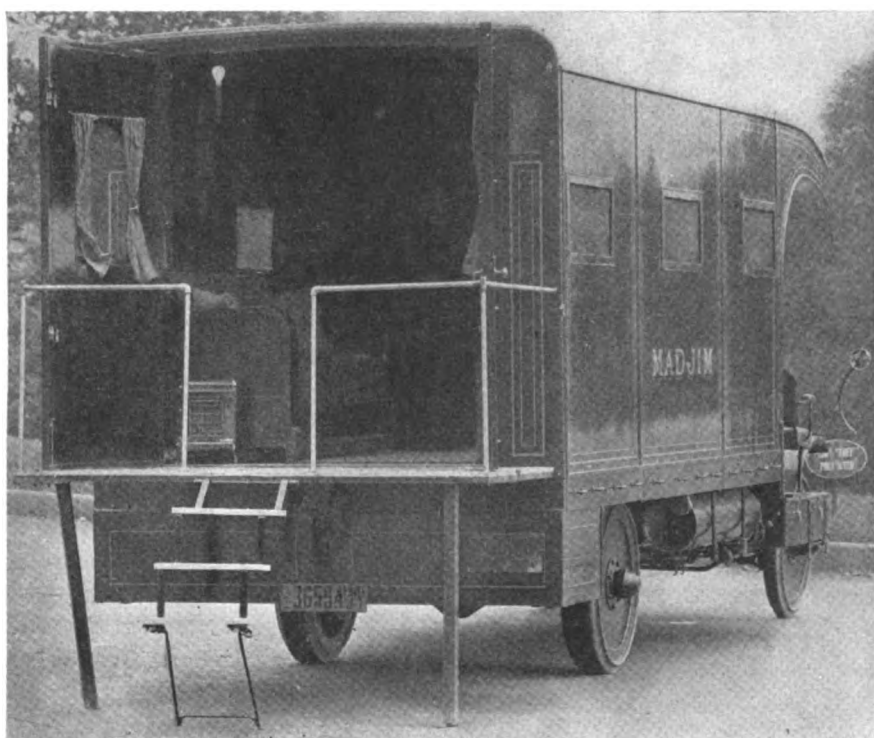


The Living and Observation Room of the "Madjim."

roomy enough to destroy any sense of crowding and it affords a lot of attractive home features, even to a big cabinet phonograph. The spacious, nicely railed observation platform in the rear makes as comfortable and handy a front porch for pleasant days as one could ask for back at the old farm home, even if it is located at the rear of this traveling house.

And, instead of sitting and waiting for some one to drive past and break the monotony, the Sweeneys are rolling comfortably along the highway, with new scenes constantly passing before them, an endless variety and a delightful change.

Of course, when a particularly attractive or interesting bit of country is encountered, it is easy to obey



Rear View of the "Madjim" Showing the Observation Platform and Giving a Glimpse of the Family Living Room.

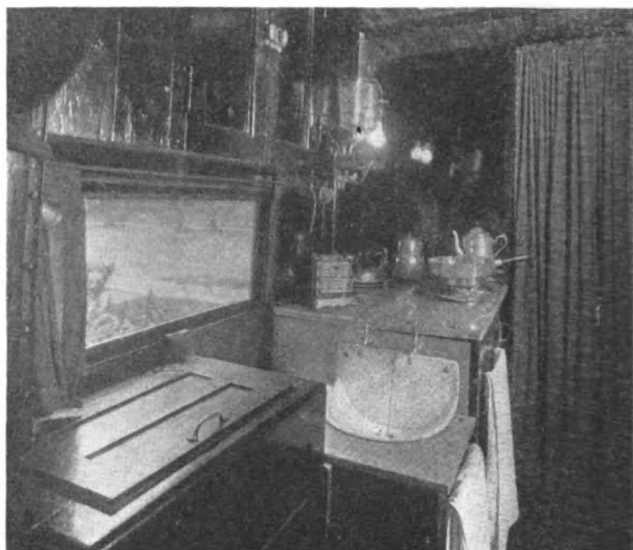
that impulse to stop and enjoy it. The rolling home is simply parked in some pleasant site and the family is at once comfortably domiciled, welcomed by the neighbors, if there are neighbors, and all ready to absorb just as much fun and enjoyment as there is to be derived from their immediate environment.

Then when the scenery begins to pall, or the gypsy road beckons again, it is an easy matter to start the wheels rolling and to bid good-bye to the spot where they have lingered as long as the lingering seemed good.

Tourists are rapidly coming to get the idea as to the great number of inviting things there are to see and enjoy in this land of ours. Each year it is becoming easier for them to visit these places, whether it be our great national parks, our cities or the attractive spots here and there that go to make up the country's vast and inviting out of doors. Tourist camps have been established near many of our cities and tourists are welcomed to these camps by the cities which establish them. The dwellers in these tourist camps are no mean addition to the regular population and the merchants of course welcome the business they bring. It has been discovered that many automobile tourists from the South come North in the summer, pick out some attractive camp near a good Northern city and stay there, maybe for weeks, forgetting the oppressive heat of their Southern homes in the cooler Northern climate.

Northern tourists return the compliment when winter blasts begin to blow. They turn the car's nose southward and hie themselves to some balmy southern point, where they share with the southerner his mild, delightful climate, while northern fields are buried beneath blankets of snow.

Of course a great many of these tourists have not yet gone to the trouble which Sweeney has taken in



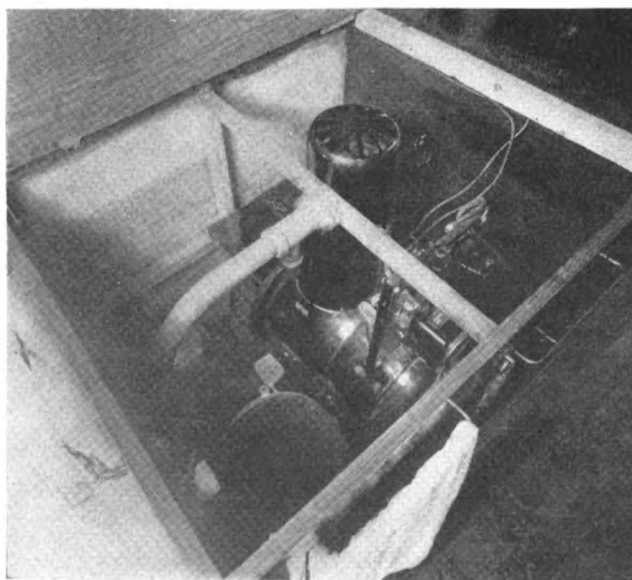
The Kitchen and Lavatory of the "Madjim."

preparing their house on wheels and they pass the time, on tour, in varying degrees of comfort. But he, with his splendidly appointed truck, has pointed the way to a lot of comfort and convenience for travelers which they do not enjoy today.

It is not unreasonable to suppose that many others are considering seriously the equipment of a traveling home such as this. Some of these already have perfected such equipment and are spending several months in each year with it on the road. Some combine one sort or another of commercial enterprise with their journeying and make some advertising stunt, or selling endeavor or perhaps some amusement offering pay their expenses and a good profit besides.

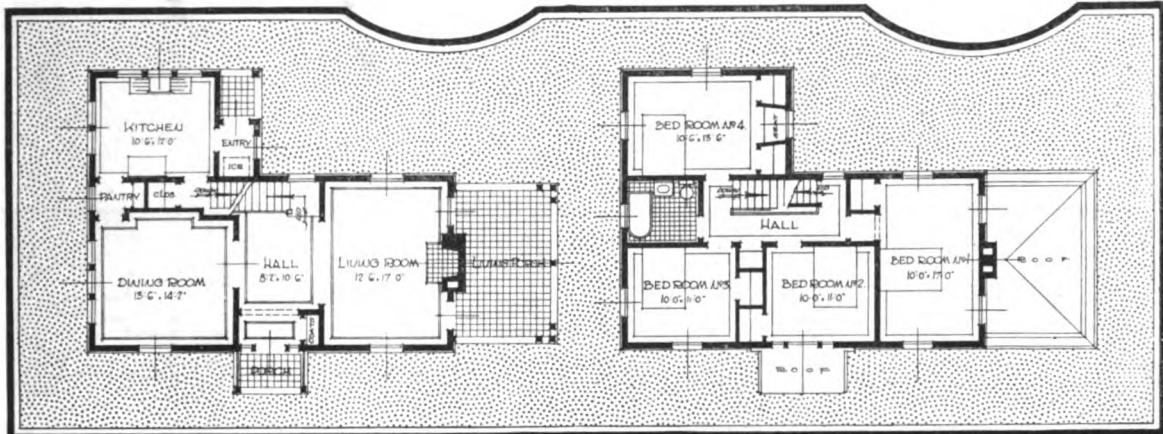
But this is not written to suggest the commercializing of the tour or anything to disturb the blissful, reasonably carefree enjoyment of gypsying de luxe. For, remember, we started out to go a-gypsying; not like your true gypsy, whose chief diversions are horse trading and fortune telling, but like the gypsy in wandering across the country, seeking, temporarily, pleasant abiding places, and traveling on when the impulse strikes him.

There are those who spend their vacation times upon a single bay or river, their activities circumscribed within the limit of the movement of a houseboat. Think how much wider is the horizon of those who journey overland, free to go wherever there is a track over which their truck may pass. For those who are content to sit more or less idly, always in the same location, amid the same surroundings, the wide cruising radius of the home on wheels possibly would not have a very strong appeal. But to those who desire to travel, to get away from the old, trodden paths, gypsying de luxe—or approximating it in whatever degree the travel desires, holds some charms, some possibilities which those who have tried it declare cannot be achieved in any other way.



The Electric Light Plant That Lights the "Madjim" and Furnishes Electricity For a Water System and the Electric Cooking Utensils.

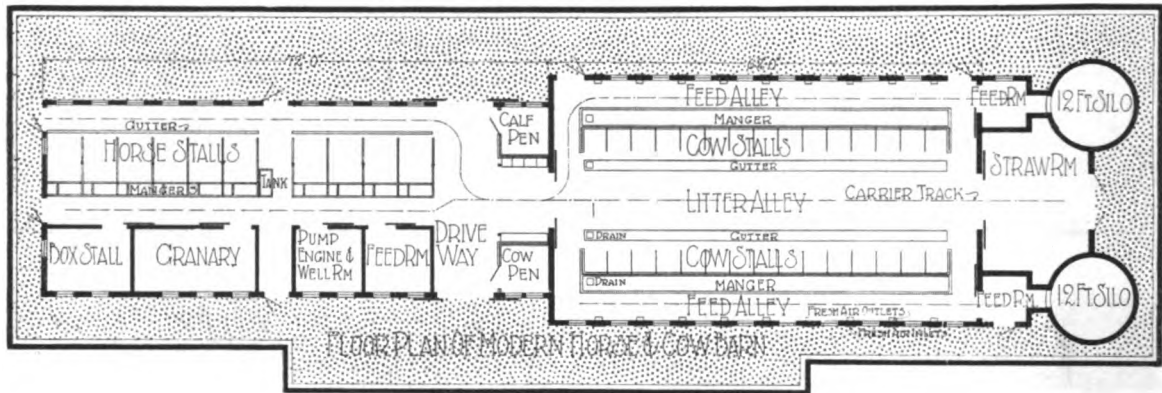
FARM MECHANICS BUILDING DESIGNS



BED ROOM AND BATH
ON THIRD FLOOR

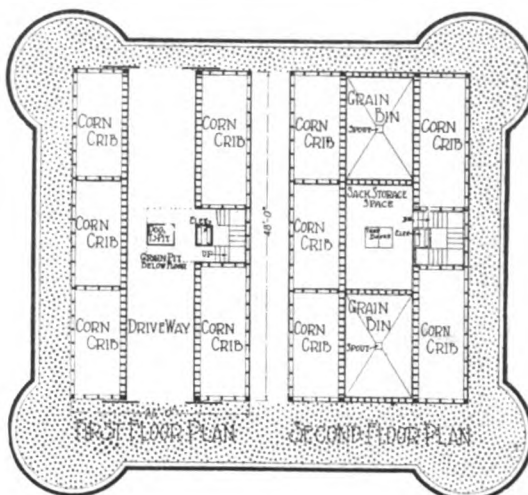


NEW ENGLAND FARMHOUSE TYPE. This house follows the good taste of simplicity thruout; the exterior shows no ornament, yet the effect is good. The latticed entrance porch reminds one of the old New England farmhouse entrance and extends a hearty welcome to the visitor. The living porch is cool and comfortable, it has a cement floor and can readily be enclosed with sash and screens. The plans show a center hall with the main rooms on either side. The kitchen and service entry are placed in the ell that extends to the rear. On the second floor are four bedrooms and a bath, while a bedroom and bath are also provided on the third floor. A generous dormer on the rear gives good light and ventilation for the third floor rooms. A cellar is provided under the entire house, where is found the laundry, heating plant, coal storage and the like. The house is of frame construction and is economical to build. R. C. Hunter & Son, Architects.



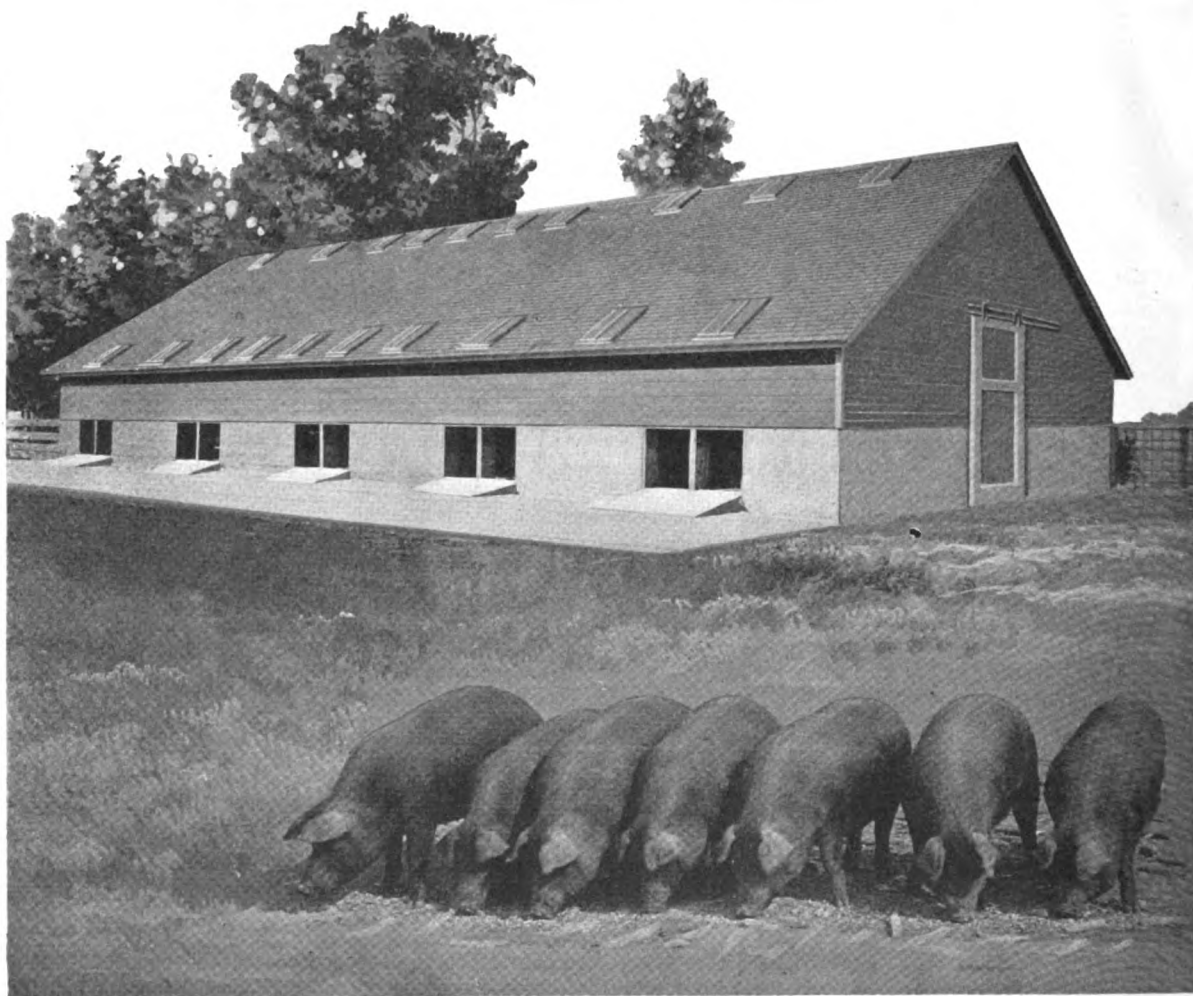
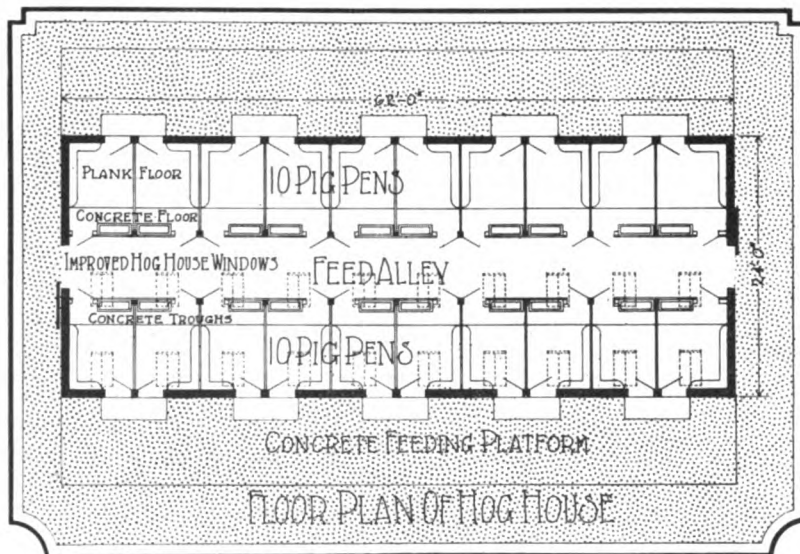
COMBINATION DAIRY AND HORSE BARN. The barn shown in the illustration was especially designed to accommodate a herd of 30 cows and 10 horses and to provide storage for the feed they need. The floor plans show how the two stables are separated, and the layout of the stalls. The dairy barn is 36 feet wide and 62 feet long. The stalls are ranged along a center driveway. This part of the barn is one story high, while the horse barn has a second floor for hay, straw and other roughage. Included in the horse stable are two pens for cows or calves, feed room, granary and a room for the engine and water pump. R. J. Ton, Tinley Park, Ill., the owner of the barn, says he has found it very satisfactory.

FARM MECHANICS BUILDING DESIGNS



RAT-PROOF, WATER-PROOF CORN CRIB. Those corn growers who had a good corn crib were either lucky or shrewd last year, as when the bottom dropped from under corn prices they had a place where the crop could be stored and fed and marketed "on the hoof." The high crib shown in the illustration is the sort that is recommended. It is 26 feet wide and 48 feet deep. The foundation and floor are of concrete. Thru the center is a 10-foot driveway while on either side is an 8-foot crib, with open crib siding, which permits ventilation, but keeps out the weather. Over the driveway are bins for small grains. An elevator is installed in the center of the building, which spouts the corn to the cribs and the grain to the bins.

FARM MECHANICS BUILDING DESIGNS



GABLE-ROOF HOG HOUSE. This building is designed to house 20 sows and their pigs. It is a gable roof house, set on a concrete foundation with walls of the same material extending well up before the frame begins. Each of the 20 pens has an opening that lets the hogs out to the concrete feeding floor at the side. Light and ventilation are provided by a double set of roof windows and on the south exposure, insuring a maximum of warmth for the animals during the late winter and early spring. A feed alley extends thru the center of the building, with troughs of concrete built into the floor. The dimensions of this hog house are 24 by 62 feet.

Wisconsin's Radiophone Service

How the University of Wisconsin is Aiding the Farmer with Radio Broadcasts

By **MALCOLM P. HANSON**

Chief Operator, Radio Station, University of Wisconsin

WHY the sudden popularity of the radiophone? Is it merely a fad, a scientific curiosity, or a boys' plaything, as some people believe? Will the multitude of radio fans eventually tire of their entertainment, and cast their instruments aside to take up some other hobby? Or has the radiophone come to stay, to take a place of ever-increasing importance in the daily life of the people by spreading information, culture and wholesome entertainment directly into the homes even in the most remote sections of the country?

Perhaps the best method of convincing the skeptic that the radiophone not only represents a means of entertainment but already is of great practical value is to describe in detail how it is employed by the University of Wisconsin to render real service to the citizens of its own and adjacent states. Most radio fans within a thousand miles of Madison know the University Station familiarly by its official call letters, WHA, and have listened enthusiastically to the regular Friday night concerts which have been sent out for the past year. Every noon finds more than half a thousand listeners distributed over Wisconsin, Illinois, Iowa and Minnesota, and even a few in Missouri, eagerly copying the weather and market reports and time signals which are sent broadcast from this station.

As a result of development work during the war, the practicability of the radiophone for broadcasting work appeared so great to Prof. Earle M. Terry, the director of the Radio Station, that he hastened experiments for the purpose of constructing a powerful broadcasting station. Late in 1920 a radiophone transmitter of medium power was completed and, after a few preliminary tests, was placed in operation on January 1, 1921. At first only the daily weather forecast and occasionally music was sent out. The success of this service was so pronounced that it soon appeared desirable greatly to extend its scope. The Wisconsin State Department of Markets became interested, and, convinced of the possibilities of this means of distribution, furnished the first market report to be broadcasted from this station on September 19, 1921. Since that time the daily market and weather service, both by radio telegraph and radiophone, has been in operation without serious inter-

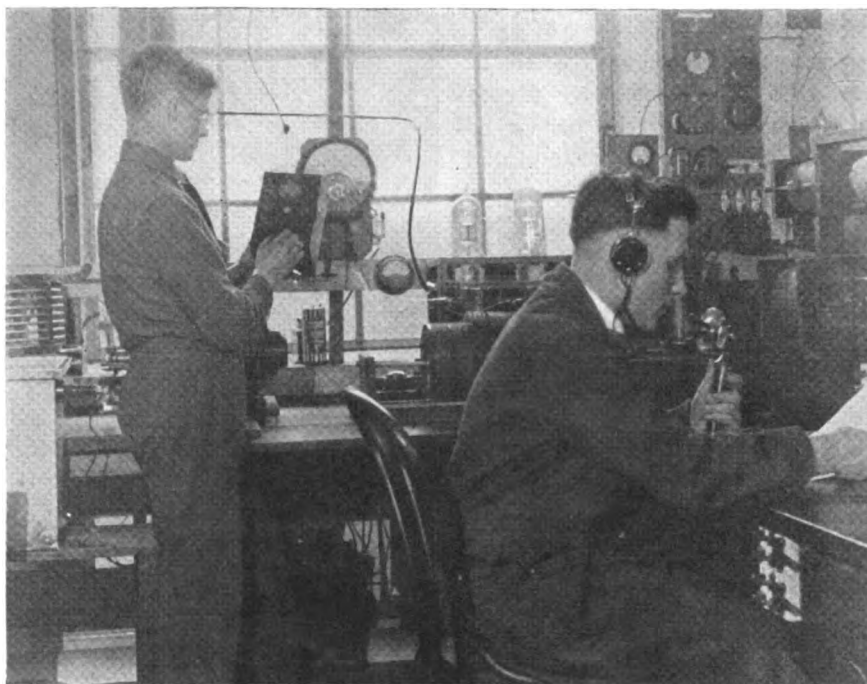
ruption, and is proving of the greatest value to the people.

In order to increase the dependable range of the broadcasts, the power of the radiophone equipment has been increased as rapidly as facilities have permitted, until now the daily noontime broadcasts are heard with regularity between 200 and 300 miles away, while at night, under good conditions, the radiophone has been heard at many points more than 1,000 miles from Madison.

In addition to weather and market reports, the radiophone is now regularly used to convey other valuable and instructive matter to the people. A time signal is sent out daily at 1 P. M. The regular Friday night concerts are now organized to form a musical appreciation course under the direction of Professor E. B. Gordon, Chief of the Bureau of Community Development of the University Extension Division.

All the concerts given by visiting artists and by the University musical organizations from time to time, as well as important speeches and lectures, are also sent out.

Another recent addition to the radiophone service by the University is a weekly press bulletin containing items of general interest concerning University or state activities. Another feature is the weekly talk given for the benefit of those especially interested in radio development.



Sending Out the Daily Broadcast from the Wisconsin Radio Station. Malcolm P. Hanson, Chief Operator, talking, at the right. W. M. Knott, Assistant Operator, checking up on the "wavelength."



Receiving the Daily Radio Report from the University of Wisconsin. Complete installations of the type shown, with mineral detector, are in extensive use, and cost from \$30 to \$50. Such a set will receive the radiophone signals up to 40 or 50 miles.

The great educational possibilities of the radiophone are being recognized by the University authorities, and plans are practically completed to add to the broadcasting program in the near future an extensive series of miscellaneous daily and weekly lectures on various topics by prominent authorities. A committee appointed by President E. A. Birge of the University will arrange and supervise the broadcasting of this matter.

From the foregoing it will be seen that a very extensive use of the radiophone for the benefit of the people is already made, and that even greater possibilities exist for its expansion. The farmer is no longer dependent upon hearsay or his weekly paper for market quotations. There are at the present writing over 500 receiving stations which receive and make use of the daily market and weather reports; 350 of these are in the state of Wisconsin, while the remaining 150 are scattered over adjacent states. In order to give this information the most widespread distribution, receiving stations copy these reports on the official forms furnished by the Wisconsin Department of Markets, post them in public places, and distribute them to other persons or firms who may be interested. The

service is of especial value to rural banks, newspapers, county agents, etc. In many such receiving stations loud speaking equipment is installed which makes the voice or music received audible over an entire room. Several rural telephone companies receive the daily reports and then pass them on to any of their subscribers who may desire this information. The market and weather report is of considerable value to the farmer and places him practically on the same basis as the speculator who can afford his own market wire service. A recent questionnaire sent out to all receiving stations making use of these reports showed that while the installations belonged chiefly to farmers, a great many other professions and trades were represented, from the high school teacher who teaches radio telephony to his students, to the invalid who, unable to leave his bedside, finds comfort

and companionship in the voice he picks out of the air.

Many letters received by the University Radio Station bear witness to the value of its broadcasting work, especially to the rural population. Practically all farmers, shippers and producers within 200 miles are now guided in their business by the daily radio



Listening to a Radiophone Program After the Day's Work. This shows a simple vacuum tube receiving set in use. Such a set will receive radiophone messages in the day time up to 150 miles and at night sometimes up to 1,000 miles. The cost of the installation is approximately \$80.



Receiving Set of the More Advanced Type. Receiving sets with loud speaker attachment such as the one shown here are used extensively by banks and newspaper offices, etc., and cost up to \$250 or \$300.

reports, with a resultant profit. An inestimable amount of money has also been saved the farmers who have taken advantage of the daily weather reports and have thus been enabled to protect their stock, water supply and crops from sudden frost or storms. Faraway states share in the benefits of many broadcasts. Thus a rancher from Wyoming, who is located forty miles from any railroad, writes that the long winter evenings are no longer dreaded, but that now everyone turns to the radio receiving set for entertainment and instruction. From a little town in Nebraska comes the word that a Music Study Club has been formed among the farmers' wives, who gather around the radio receiver every Friday night to profit by Professor Gordon's music and lectures.

When a great cellist recently played before a big audience in Madison, he did not know that among an audience many times as great which listened to him by radio there was, in a little Wisconsin town, an old man on his deathbed, who, thru the efforts of his little grandson, was enabled to hear the strains of his favorite instrument a short time before he passed away.

Numerous letters such as those above described, received constantly from all parts of the country, show the extent to which the radiophone has already entered into the daily life of the people.

One of the greatest problems confronting the novice in radio is that of obtaining suitable information. The great volume of mail carrying such requests reaching the University of Wisconsin daily soon caused this institution to realize the great need. Its present limited facilities not permitting an individual reply to all letters, the radio department of the University was forced to attempt a solution by preparing an

elementary circular containing installation and operating instructions for radio telephone receiving sets. Much valuable information necessary to the beginner has been incorporated in this pamphlet, which is obtainable from the University Extension Division at a small fee. To meet the great need for more detailed information, which will enable the novice to assemble, install and operate his receiving equipment to the best advantage, a correspondence study course consisting of six assignments is under preparation by the University Extension Division. In this manner the University expects to help the people to receive properly the matter which it broadcasts for their benefit.

Radio equipment is now obtainable which can be easily installed and operated in any location, even by the beginner. The wire to "pick" the message out of the air, called the antenna, may be a single copper wire 100 or 200 feet long. The simplest types of receiving sets employing so-called mineral or crystal detectors range in price from about \$25 to \$50, and will receive radiophone broadcasts from the more powerful stations up to a distance of about 50 miles. To receive speech and music regularly over greater distances requires a receiving set using a vacuum tube detector, and perhaps several amplifiers to increase the intensity. The simplest types of such installations suitable for normal daylight reception at a distance up to 150 miles cost from \$75 to \$125; a receiving station of the very best type, which will receive the daily reports at a distance of 200 miles or more, may be fitted out for \$175 to \$200. At night, stations much farther away may usually be heard. Almost any evening, with a receiving set employing a vacuum tube detector, a number of broadcasting stations within a thousand miles may be picked up. Any vacuum tube receiving set with amplifiers may be equipped with a loud speaking horn to make the wearing of the ear receivers unnecessary; such loud speakers cost from about \$30 to \$110, depending upon the volume of sound desired.

Just as quickly as the equipment can be assembled and manufactured, new receiving stations are being installed everywhere. It appears only a matter of a short time before the radiophone will be as common as the phonograph, but of very much greater practical value. In addition to the agricultural information broadcasted, which is of great economical value to the farmer, the broadcasts of educational and entertainment matter appear to be of great importance. Life on the farm and in small communities has heretofore lacked much of the entertainment and facilities for instruction offered to people in the larger cities. But with the advent of the radiophone it appears that the old days of monotony are past. After the day's work is done, the family may listen to entertaining concerts sent out from any one of a number of broadcasting stations, or may profit by instructive lectures and speeches, such as are sent out from the University of Wisconsin, and eventually will be broadcasted from every state in the country for the benefit of its citizens.

"There's a fine Herd of HOLSTEINS at FITCHOME FARMS" *Says "The Judge"*



IT is a temptation when beginning this story about Fitchome Farms, near Aurora, Ill., to tell the life story of William H. Fitch, the owner, for Mr. Fitch has had a most interesting career—nothing spectacular about it, perhaps, but one of those successes that are inspirations to the ambitious American boy. Born and coming to young manhood on a farm in New York state, Mr. Fitch left to go West, worked his way thru school, secured a place in a small manufacturing plant at Aurora and is now president of the concern—the Richards-Wilcox Manufacturing Co., which, under his leadership, has become one of the largest manufacturers of hardware specialties in the country.

However, the success of Mr. Fitch is not the theme of this story. Rather it is to describe his farms, where with much more rapidity than the manufacturing plant was built



William H. Fitch, Owner of Fitchome Farms, Near Aurora, Ill.

up, Mr. Fitch is building a herd of Holsteins that has every promise of being a notable one among the many such of this breed of dairy cattle.

Fitchome Farms were acquired by Mr. Fitch several years ago. They comprise about 400 acres of rolling, fertile farm lands, but when Mr. Fitch made the purchase the buildings on them were those usually found on a grain farm. The few dairy animals on the place were grades.

Three years ago Mr. Fitch decided to convert Fitchome Farms into a Holstein dairy and breeding establishment. But unlike many men who have the means he did not go out and buy a herd, but started systematically to build one up by breeding. Several good type Holstein cows were secured and to mate with them Mr. Fitch looked around for a high-class bull. It was then that he turned to W. D. Robens, his boyhood friend in their native town

FITCHOME FARMS.

NOTABLE FARMS IN PICTURE & STORY

of Poland, Herkimer County, New York. Mr. Robens had made a wonderful success with Holsteins. He is said to have produced more 30-pound cows on his farm than any other breeder. One of his most notable animals was "King Korn-dyke Sadie Vale," noted because his dam was a 40-pound cow, one of his sisters is a 40-pound cow,

and he has a daughter that is a 40-pound cow. And it was one of his sons, "King Korn dyke Sadie Vale Jericho," that Mr. Fitch se-



"The Judge"

secured to head his herd.

This bull was secured three years ago and since that time every heifer produced at Fitchome Farms has been retained until the herd now numbers close to 150; practically all of them young animals.

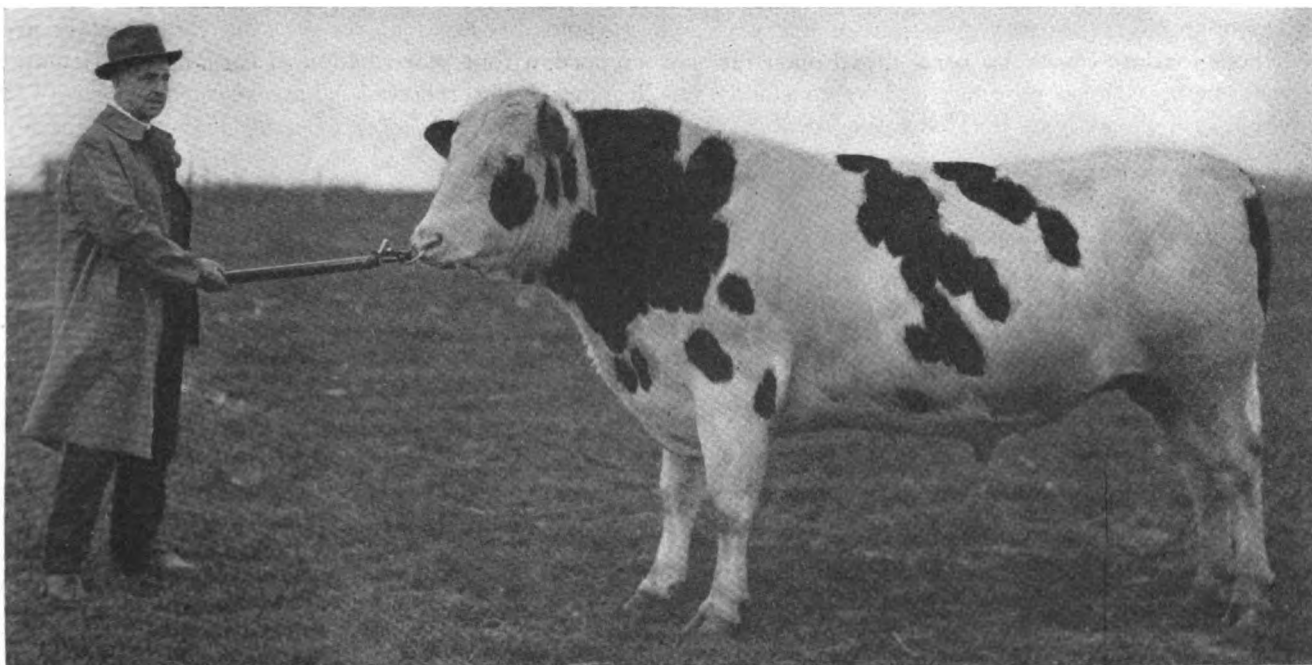
There were only two bulls, both calves, aside from the herd sire, on the place when I visited it in April, but there was a bunch of as fine heifer calves and heifers as one would want to see.



Charles P. Klose, Manager of Fitchome Farms, and One of the Promising Holstein Heifers, "Piebe Homestead Canary Pontiac," at Fitchome Farms.

"We have rather reversed the order of things when a good-sized dairy farm is started," Mr. Fitch explained to me in telling about his methods. "Our idea was to acquire a herd without making a great big investment. I had a lot of help in selecting the animals I did buy, the Illinois Holstein Association members and officials having been very gracious in giving me the benefit of their advice and assistance.

"However, we have reached the point where we need a second bull for outbreeding, and I am looking around for one now. I guess I'll go back to my old friend, Robens, and add another strain of his blood lines



Owner Fitch and the Chief Herd Sire, "King Korndyke Sadie Vale Jericho," at Fitchome Farms. This three-year-old bull has sired practically all the young stock at Fitchome Farms, and altho there has not been an opportunity to prove his worth, great things are expected of his progeny. He is by "King Korndyke Sadie Vale," a bull that has the distinction of having a 40-pound sire, a 40-pound dam and a 40-pound sister. "Jericho" weighs 2,275 pounds.

- FITCHOME FARMS.



Looking Across the Paddock Toward the Main Dairy Barn at Fitchome Farms, with a Number of the Milking Herd at the Self-feeders. The buildings at Fitchome Farms are of frame construction, designed and equipped for economy in labor and the health of the animals.

that have proved so success for him."

Thus you may understand that Mr. Fitch is building up the Fitchome Farms herd in much the same way he built up his manufacturing business. It will take time, perhaps, to produce animals that will get into the 40-pound class, but by persistently improving the herd, there is no doubt about the outcome.

Stress has been laid on his program at Fitchome Farms for the reason that it is right in line with the methods that are constantly being urged upon farmers everywhere. "Breed up your herd by constantly improving the blood lines." That's the royal road to

success in dairy farming.

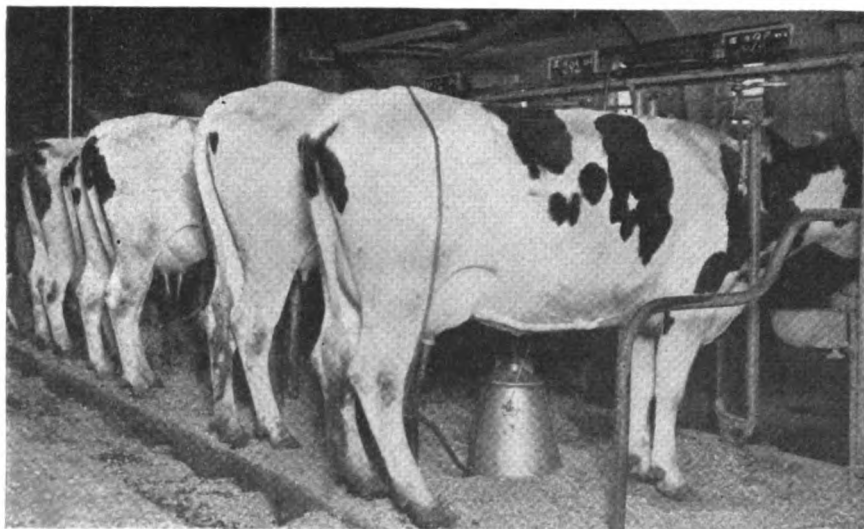
The management of Fitchome Farms since the Holsteins were secured has been in the hands of Charles P. Klose, a young man who graduated from the Wisconsin College of Agriculture. And it was he who showed me over Fitchome Farms and gave me a close insight into the methods they are using there.

Two farms are joined to comprise Fitchome Farms.

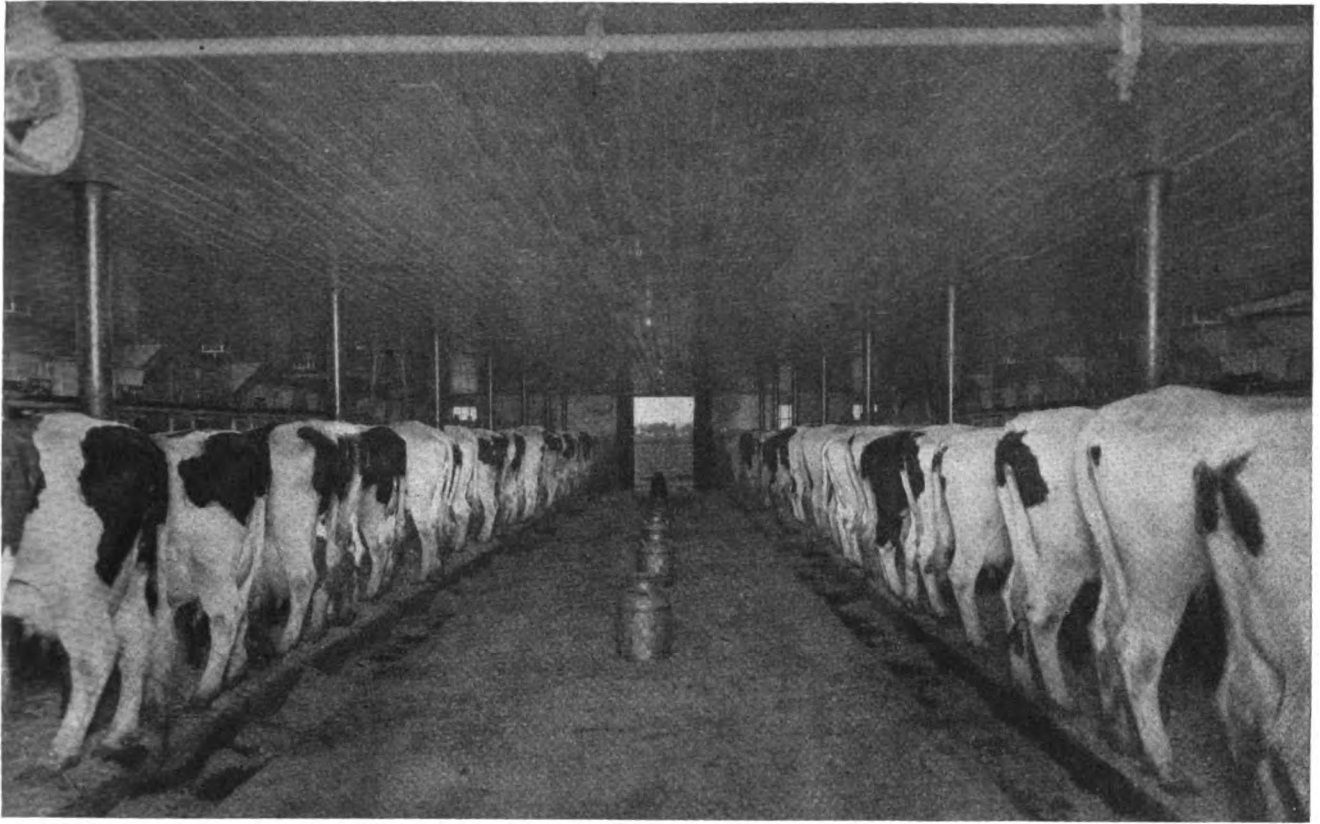
About 300 acres of the 400 the farm contain are cropped, a four-year rotation of corn, oats, barley and legumes being followed. Last year there were 125 acres of corn, 70 acres of oats, 35 acres of barley and 50 acres of hay, alfalfa and timothy, grown. Besides there are 40 acres of pasture land, the herd getting a daily period of outdoors in pasture.

Practically all the hay field work is done with the two tractors on the place. This includes plowing and discing and, last summer, after one horse had been lost because of the heat, the tractors were attached to the binders. A threshing outfit also is part of the equipment and the tractors furnish the belt power for the threshing and for the silo filling.

As the herd of Holsteins increased so have the buildings at Fitchome Farms. In fact, building has been going on pretty steadily



All the Milking at Fitchome Farms Is Done by Machines, This Picture Showing the Milkers at Work.

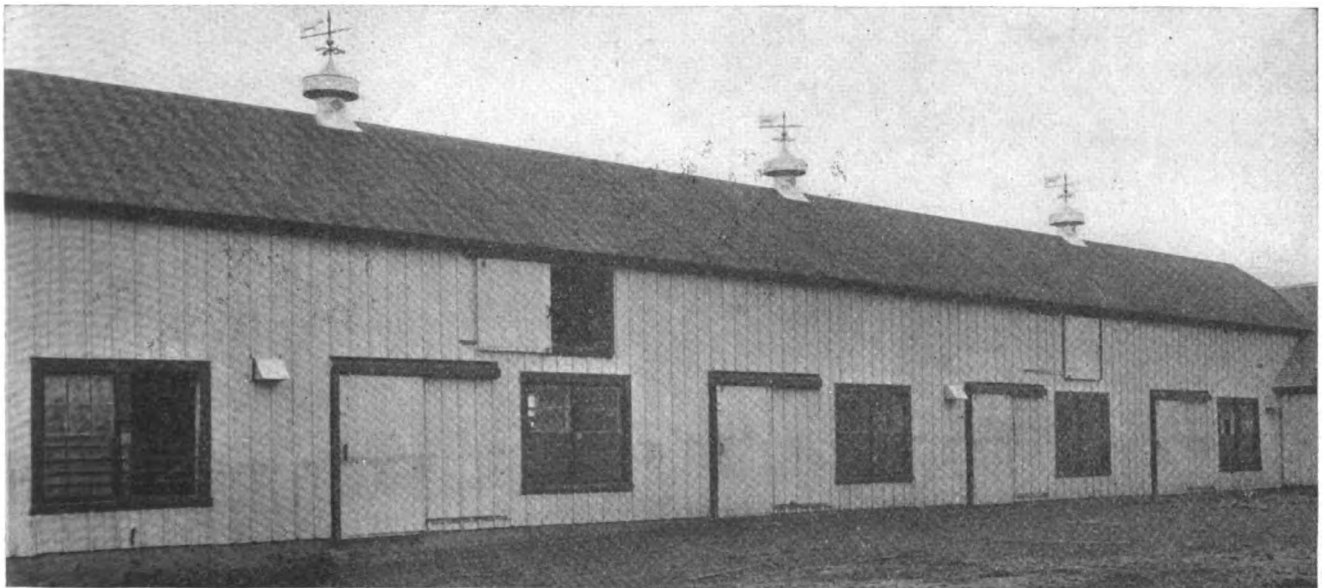


View Thru the Litter Alley in the Main Dairy Barn at Fitchome Farms. The barns are equipped with steel stanchions and stall partitions, individual drinking cups and a modern system of ventilation. Manure spreaders are driven thru this broad alley each day and the manure taken directly to the fields and spread.

during the last three years. A second dairy barn, a calf barn, open cattle sheds, men's dormitory and a milk house and pasteurizing and bottling plant have been added.

These buildings inclose three sides of a large yard, or paddock, in which a concrete floor is laid. The cow

stable under the original barn on the place has stanchions for thirty-six cows. Adjoining it at right angles is the new dairy barn, where there are stalls for forty-six animals. At right angles to the new dairy barn are the open cattle sheds facing the paddock and adjoining these sheds is the calf barn.



The Calf Barn at Fitchome Farms. This building forms the third side of the paddock and accommodates the young growing stock, which have access to yards at the rear of the building.



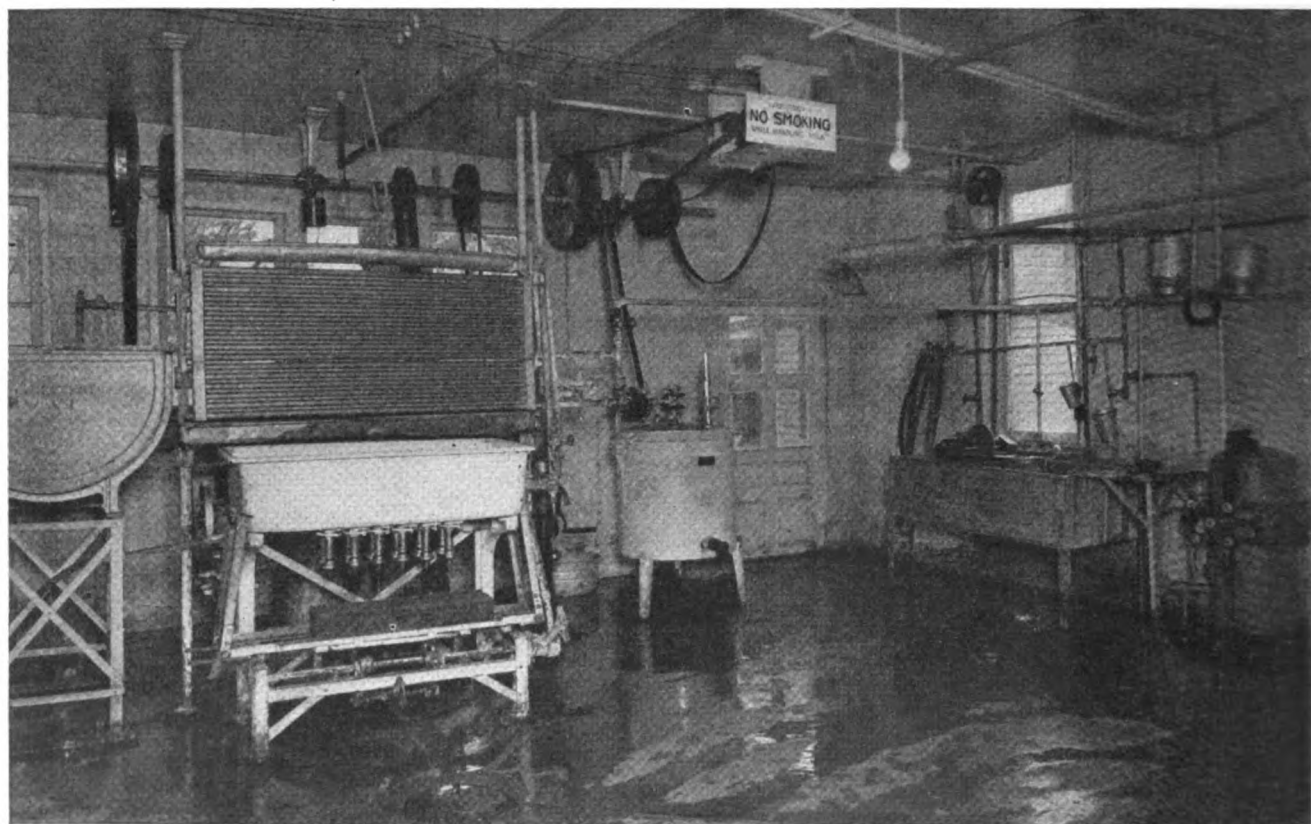
The Milk and Cream from the Holstein Herd at Fitchome Farms Is Sold Direct to Consumers in Aurora and Is Transported to Distributing Stations by Motor Truck.

This makes a compact building group—one that is bad from the standpoint of our photographer, who dodged here and there trying to find a point of vantage

for his camera so as to take them all in. However, it is economical as regards man power as there is no point in any of the buildings that cannot be reached quickly and with a minimum amount of walking.

It can be readily understood that a successful manufacturer would install labor-saving equipment in any factory that he was interested in. That is what Mr. Fitch has done at Fitchome Farms. The barns are really efficient milk factories. The floors of the cow stables are of concrete, with continuous mangers, divided by a partition for each cow. The sanitary steel stanchions and stall partitions are set into the concrete floor, while at each stall head there is an individual drinking cup. The equipment for operating milking machines is installed and all the milking is done by machine.

The stalls in both barns face out, leaving a wide alley thru the center. Manure spreaders are driven into the barns daily and the fertilizer carried directly to the fields and spread. This method



Interior of the Milk House and Bottling Plant at Fitchome Farms, Showing the Equipment that Is Used in Pasteurizing and Bottling the Milk from the Holstein Herd.



Twelve Pure-bred Hampshire Sows Are Maintained on Fitchome Farms and Eat the Surplus Milk and Grain the Farms Produce. They have been found a profitable adjunct to the dairy business and plans are being made to increase the herd.

cuts the labor cost of handling and prevents loss of valuable fertilizing elements.

Eighty head were being milked when I visited the farm. The milk is taken to the milk house, cooled, pasteurized and bottled. It is sold directly to the consumers on milk routes established in Aurora, which is about two miles distant. Fitchome Farms milk is the only milk sold in the city from tuberculin-tested cows, the herd being under Federal supervision. At first the milk was sold in bulk to dealers, but it has been found much more profitable to make the distribution. The milk house is fully equipped with separators, pasteurizers, coolers and sterilizers, even the water being run thru a softener.

All of the power about the place is derived from a 32-volt electric plant that also furnishes the lights in the various buildings. Three motors get current from this plant, two in the dairy barns and one in the bottling house. This plant also operates a compressed air water pressure system that furnishes the water for the dairy barns and tanks in the yards.

To turn any surplus of skim milk into a profit, Fitchome Farms have recently acquired some pure-bred

Hampshire hogs. Twelve sows had farrowed just previous to my visit to the Farms and there were more than seventy-five pigs coming along nicely. They will be brought up on skim milk and will prove a



Some of the Young Stock on Fitchome Farms. Farm Manager Klose is particularly proud of the youngster in his arms, it being his first and a son.



Home of William H. Fitch, Owner of Fitchome Farms, Aurora, Ill.

profitable factory for any of the farm products not suited for the dairy animals.

It is seldom that you will find a better equipped, more workmanlike establishment for the production of feed for cattle and livestock, milk and milk products than Fitchome Farms nor a place where the necessary work can be done with less effort and the comfort and health of the animals better taken care of. But the notable feature of the Farms is the methods they are using to build up a herd of high-producing dairy animals—methods that every farmer can take unto himself with profit. In the last analysis, Fitchome Farms are an example of how things are done when a suc-

cessful manufacturer turns his hand to it.

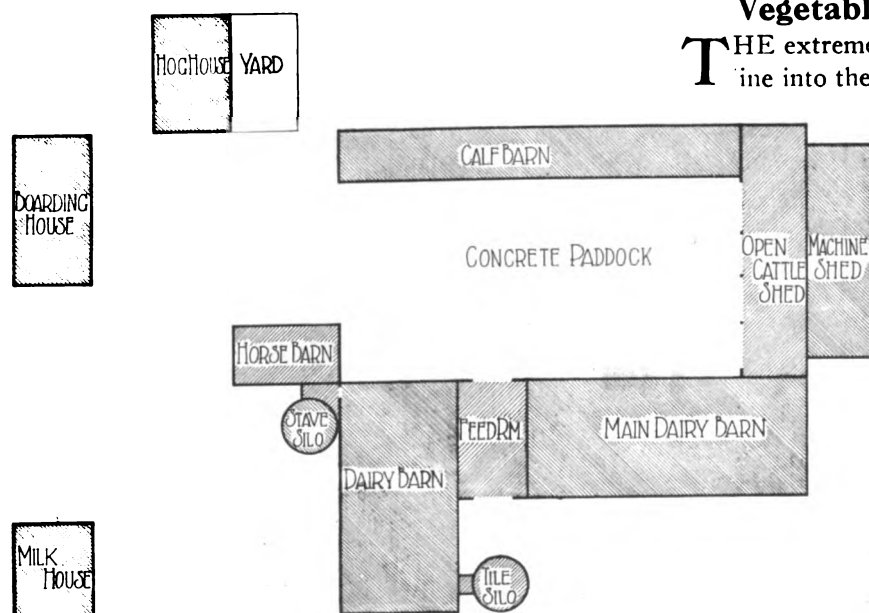
But back of all this is Mr. Fitch's love for farming and outdoor life. He handles livestock as deftly as the herdsman; he knows as much as his trained manager about crop production and tillage methods, and it is on this farm that he gets what most men derive from golf, or any other outdoor sport—good healthful exercise, coupled with the joy of accomplishment and the profits that are derived from a successful farm.

EDITOR'S NOTE: This is the ninth of our series of "Notable Farms in Picture and Story." The tenth will appear in an early issue.



Vegetable Oil as Fuel for Tractors

THE extremely high cost of transportation of gasoline into the interior of the Belgian Kongo, largely due to tsetse flies, which make it impracticable to use animals for transporting goods and necessitates the use of native porters, led the Belgian Colonial Ministry to organize a trial of road tractors using palm oil as fuel. The results of these trials gave full satisfaction. The semi-Diesel two and four-cycle engines ran normally on the palm oil, and the power developed was equal to if not greater than that obtained with kerosene. Nothing was noted that suggested possible difficulties in using palm oil in these engines. Starting up, without gasoline injection, was good, and there was no carbonization.



Layout of Building Group on Fitchome Farms, Near Aurora, Ill.



Fitchome and McCormick-Deering

LOOKING for a man-size farm on which there is no McCormick-Deering equipment is pretty much of a hopeless task. It is like the ancient hunt for the needle in the haystack. McCormick-Deering machines have come to be so necessary in modern, profitable farming and they are made in so many varieties and for so many purposes that their help is called for wherever farming is practiced *as a money-making enterprise.*

At Fitchome Farm many McCormick-Deering machines are at work. We will refer only to the two Titan Tractors, one of which is shown above pulling the International Tractor Disk Harrow, and to the four International Manure Spreaders which go through the dairy barns every day and carry fertility to the fields.

Sum up the ripened judgment and the experience of millions of good farmers, and you will find uniform belief in this advice.

Rely on the good design and quality construction of the equipment in the McCormick-Deering Line. Invest in Titan and International tractor power to work smoothly with McCormick-Deering belt and drawbar machines. Count on the full stocks, the ready service, the help and advice of our dealers. The McCormick-Deering Dealers are in business for your trade, but they are also working to gain your good will and confidence for the years to come.

**International Harvester Company
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92 Branch Houses and 15,000 Dealers in the United States

FITCHOME FARMS.

Lime Doubles Legume Crop

Experiments Show 85 Per Cent of Farms Have Acid Soils and Farmers are Getting Nowhere Near Maximum Yields

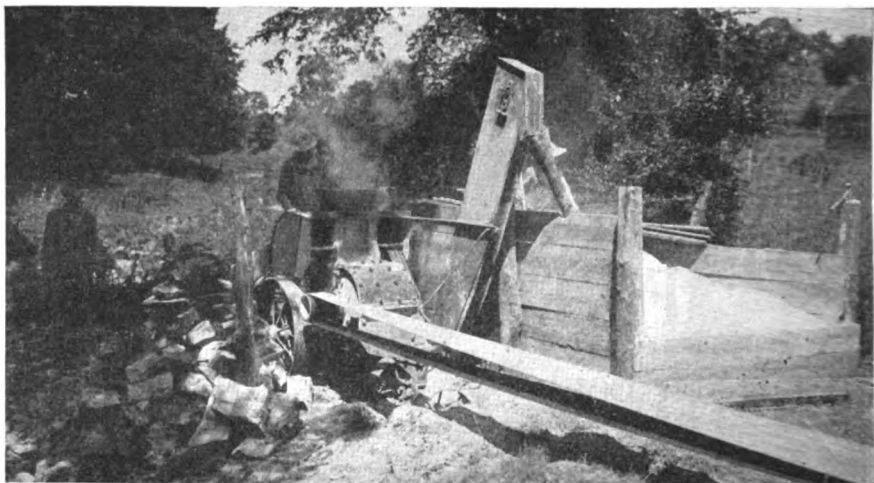
SOIL examinations made by experts from various state agricultural colleges tend to show that between 85 and 90 per cent of the fields on American farms are acid, or sour, and need lime to neutralize this condition before clover, alfalfa or any of the legume crops can be grown with a maximum of success.

When this statement is analyzed, it would seem to indicate that on thousands of farms their owners are overlooking a big source of revenue. Griffith Roberts, of the soils department of the University of Wisconsin, estimates that 150,000 farms in that state alone need lime to insure a good crop of legumes. Soil tests in the field and at Ames University have shown that 90 per cent of the farms of Iowa are sour. Soil acidity makes little difference in the crops of small grains and corn, but acid soil prevents a successful four-year crop rotation, as the season when a legume crop is grown will not be as profitable as it should be.

It is a simple matter to determine whether or not the soil of a field or of an entire farm is acid. The presence of slough grass or a light crop of clover should arouse suspicion. Every agricultural college student or graduate can make what is known as the litmus paper tests. If the farm owner is not familiar with this method, his county agent will either make it or instruct the farmer how to do it. A sample of the

soil sent to the state experiment station will quickly bring a report on the condition of the soil, with suggestions as to the amount of lime needed per acre to put the land in the best condition.

Many farmers have the mistaken idea that lime will make crops grow. Lime has no effect on the plant itself, as it is not a fertilizer and contains no plant



A Limestone Crusher and Pulverizer at Work Where the Limestone Is Secured.

food. But its mission is to sweeten the soil so that a legume plant will thrive on the food that already is in the land. On a fertile field, lime is applied and plowed under; where fertilizer, such as manure, rock phosphate, acid phosphate, or a combination of these fertilizers is used, the plant food is plowed under and the lime broadcasted over the field.

The amount of lime needed depends on the degree of acidity of the soil. This quantity ranges from two to



Relative Yields of Clover and Timothy Hay on Limed and Unlimed Lands at the Pennsylvania State College, School of Agriculture. (A) Manure, 6 tons every other year, and lime, 2 tons every 4 years. (B) Lime, 2 tons every fourth year. (C) Nothing.

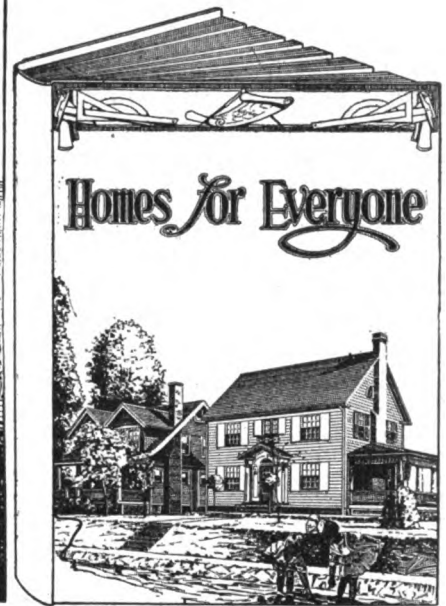
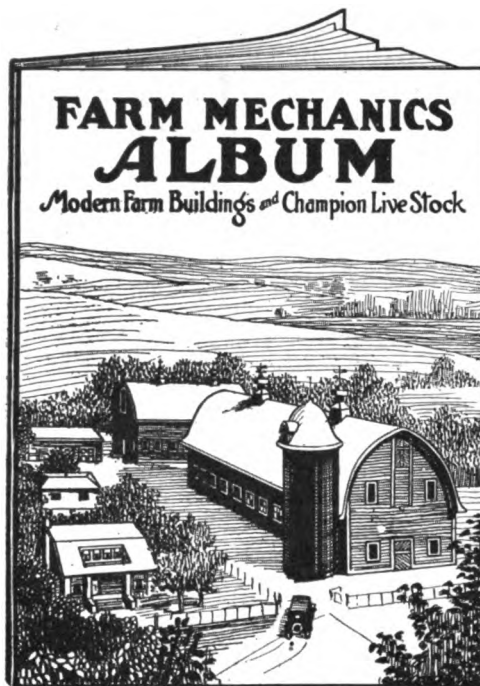
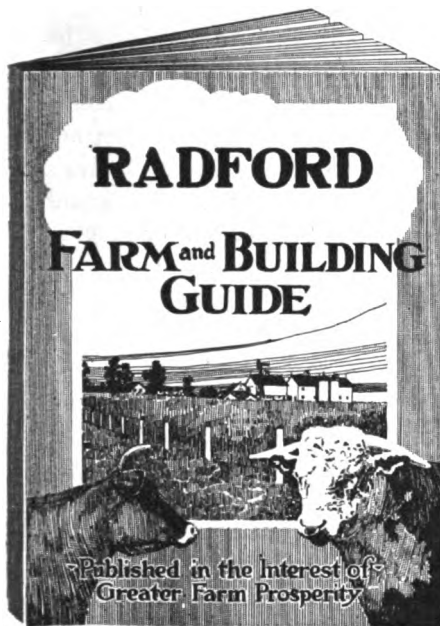
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The **FARM AND BUILDING GUIDE** contains 160 pages of useful data on Farm Buildings, ideas on remodeling, articles on alfalfa, corn, fertilizers, dairying, hogs, chickens, beef cattle, horses, orchards, and diversified farming; in fact, is a veritable storehouse of information for everyone. Size 8½ by 11½ inches.

The **ALBUM** is a big book. Size 15¼" x 18" on heavy art paper. Fourteen pages are in Full Colors—lithographed. Prize individuals of every live-stock breed are pictured, 80 in number. Twenty-four modern Farm Buildings with dimensioned floor plans are presented.

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Sowing Limestone with a Lime Sower on a Field with Acid Soil. This is one of the methods of liming land.

five tons per acre. It is put on by specially designed lime spreaders which either broadcast it over the field, or sow it much as a drill sows small grains.

Deposits of lime stone are pretty well scattered over the country. Stone will be found in almost every neighborhood in sufficient quantities to supply the farmers with their needs. Pulverized limestone may also be purchased from quarries, but this entails the expense of transportation to the nearest railroad siding and hauling to the farm.

"Limestone pulverizing rings" are becoming more and more numerous as the value of liming land is better appreciated. These "rings" are founded on the principle of co-operation. A limestone crusher and pulverizer is purchased either by an individual or a group of individuals and operated co-operatively. The crusher itself is not expensive and may be operated efficiently by a tractor or stationary engine. The stone is first crushed into small pieces and then goes thru a pulverizer and delivered either to a pile or wagon by a cup conveyor.

Test plots under the direction of state experiment stations have proved beyond doubt the value of lime on land where leguminous crops are grown. The Pennsylvania State College School of Agriculture has been experimenting with lime and lime and fertilizer combinations for many years. The result of one of these comparative tests is shown in the illustration. It will be noted that lime alone accomplished practically nothing, but a combination of lime and manure more than doubled the crop. Some experiments have shown that proper fertilizer coupled with applications of lime will increase legume crop four or more times.

Provide Grain for the Lambs

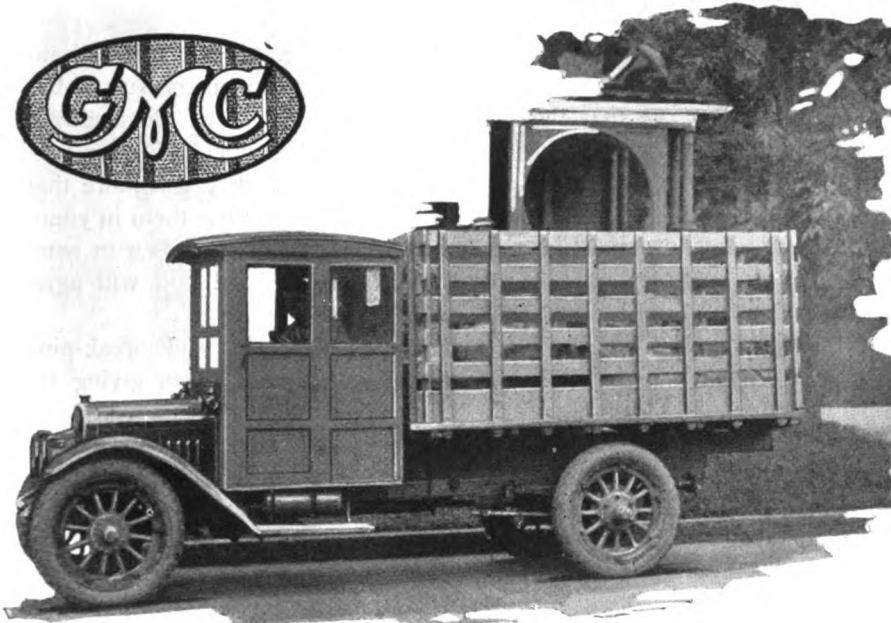
LAMBS become very fond of grain when only a few days of age. Maximum growth cannot be expected unless grain is fed. The creep method of feeding is recommended. A "creep" is a pen with suitably prepared openings accessible to the lambs, but not to older sheep. A high dry spot near where the ewes are coralled is an ideal location. Dry fresh feed should be available in the creep at all times as sour or mouldy feed is a certain forerunner of trouble.

Usually lambs learn to eat grain more quickly if they are started on a mixture of bran and oats as they are partial to this feed. A gradual change to any desired ration may then be easily made with good results. Lambs that are to be shipped to market should receive a ration consisting mostly of corn by the time they are two months old. Corn along with the ewe's milk and with pasture produces a fat lamb which kills out a very desirable carcass. Lambs that are to be kept as breeding stock should be fed oats and some bran.



Loading Pulverized Limestone Into a Manure Spreader, Which Is Often Used to Spread Lime.

General Motors Trucks



GMC Used to Haul Stock by Oscar Nelson, Lake Elmo, Minn.

Farmer Built Profitable Business in Two Months

"How to get our cattle and hogs to market has always been a problem for the farmers around here," says Mr. Oscar Nelson, farmer, Lake Elmo, Minnesota.

"This is a farming rather than a stock raising district, but a farmer always raises some stock. There is a steady cash market for livestock at the stockyards in St. Paul, 21 miles from here. The nearest loading platform is 6 miles away. That doesn't do us any good, because we seldom have enough for a carload, and can't get cars when we want them.

"I bought a 1-ton GMC motor truck with two bodies. One body is for hauling cattle and hogs the other for hauling grain and potatoes. In two months the truck enabled me to build up a good business buying stock from my neighbors and selling to the St. Paul stockyards.

"In two months the GMC worked 48 days, running a total of 1,800 miles, or 37.5 miles per day. My operating costs, figured on the National Standard Truck Cost System, shows that the GMC is costing me \$9.97 per day. This includes an allowance of \$5.00 per day for driver; but as I drive my-

self, the actual cost is only \$4.97 a day."

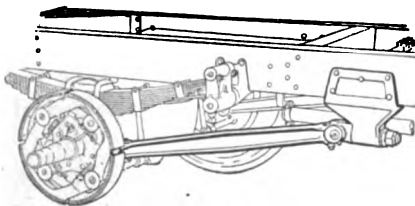
Further Continuous Haulage

In farm work with a motor truck, continuous, economical truck operation is the determining factor of success. GMC trucks have improvements built into them which are recognized as having advanced this kind of transportation farther in the past two years than it had been in the preceding decade.

The GMC Two-Range Transmission, Removable Cylinder Walls, Pressure Lubrication, Removable

Valve Lifter Assembly, built-in Electrical System, Magneto Ignition and many others are features that have made possible this advance. They all contribute directly to better haulage for more hours than has heretofore been obtainable in a motor truck.

In developing and introducing these



GMC Radius Rod

improvements GMC has again been the first. From the earliest days of the motor truck industry the General Motors Truck Company has been a leader in adopting designs that have become standard practices in the building of high quality motor trucks. It was one of the first to use a four-speed transmission, the predecessor of the Two-Range Transmission, and which has since been adopted by many other trucks. It also was one of the first to adopt radius rods on all its trucks, to take the driving thrust from the axle to the frame.

Now Standard on Most Trucks

Radius rod construction, now universal on the best trucks, is particularly essential in motor truck operation. Not only does it permit the springs to function as cushions for the load, but it also insures absolute perfect brakes whether the truck is loaded or empty, a thing that is impossible where the driving thrust is transmitted through the springs.

In fact, in every detail, GMC trucks represent the finest that is possible in a motor truck.

And their price in comparison to what they offer sets a new standard of values. At no time heretofore has a motor truck ever been offered at as low price and with such improvements and construction.

GMC chassis now list at the factory as follows: One Ton, \$1295; Two-Ton, \$2375; Three and One-Half Ton, \$3600; Five Ton, \$3950, tax to be added.

Know Your Trucking Costs

Only by knowing to a penny what it costs to operate your truck will you be able to realize the greatest returns on your investment.

We will be glad to send you a National Standard Motor Truck Cost System, adopted by the Truck Owners' Conference. No matter what make of truck you operate this system will keep your daily costs for one year. Just send us this coupon attached to your business letterhead. There is no other obligation to you.

GENERAL MOTORS TRUCK COMPANY

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WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

"Tuning Up" the Cultivator

Expert Tells How to Adjust the Machine so as to Get Best Tillage Results

By CARL H. GAMBLE

I HAVE had so many letters commenting favorably on my article under the subject, "Tuning Up Plows," that I am going to write a similar article about cultivators, because next to plowing I consider cultivating not only the most important farming operation but also the one requiring the greatest amount of time and labor. Much time is spent with the cultivator in corn fields, cotton fields, potato fields and in the fields with many other crops requiring cultivation. It seems to me, therefore, that it is highly important to have the cultivator in the best possible condition before going into the field for the first cultivation.

If your old cultivator would just lie down and refuse to work when some of the important adjustments are not correct, as will your binder, mower, tractor and other farm tools I might mention, the points brought out in this article would be considered more than they are today. But the fact that the old cultivator will just creep along and keep on doing some kind of job as long as the wheels stay on, is one reason why it is many times so sadly neglected. Tune up your cultivator this year before the cultivating season begins. Locate it where you can work comfortably for a few hours, and check over the following points:

Beware of Counterfeit Repairs

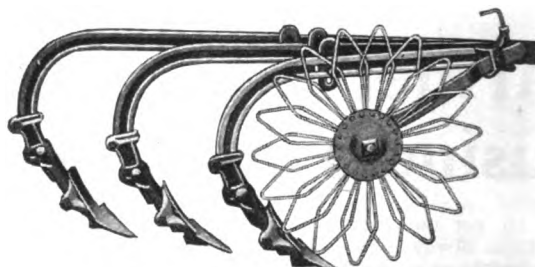
First—Examine your shovels. If they were not taken off the cultivator and thoroly greased after the completion of last year's cultivation, they will be badly rusted. They must be polished and sharpened if you expect first-class work when you go into the field. There are up-to-date blacksmith shops in most communities, equipped with polishing wheels. In having your shovels sharpened, borrow a new shovel of the make on your cultivator and ask your blacksmith to retain the original shape, comparing it with the new shovel during the sharpening process. If the shovels are so badly worn that they cannot be sharpened again satisfactorily, replace them with new shovels made by the same manufacturer who made your cultivator. You had confidence enough in him in the first place to buy the cultivator, and counterfeit repairs are never as satisfactory as the genuine.

Put Shields in Working Order

Second—Look to the condition of your shields, for next to the shovels, the shields are a most important part of your cultivator, especially during the first and second cultivation. Shields are often badly rusted and bent out of shape, and the bolt holding the shield adjusting washers or clamps becomes rusted tight so adjustments cannot be properly and easily made. So the next easy thing for the operator to do is to take hold of the shield arm and try to bend it to get the

shield located where it should be. A little light oil and patience will usually loosen the nut on the rusted bolt so that the shield can be properly set. Personally, I am a strong booster for rotating shields, having used them enough to convince me that they will more than pay for themselves the first day you use them in young corn. Get a pair and attach them as shown in small cut on this page, and I am satisfied you will agree with me.

Third—Examine the sleeve bolts and break-pins. Break-pins often become badly cut thru, giving the sleeve to which the shovel is attached the wrong pitch, so the shovel does not do as good work as it should. Replace worn break-pins with new hardwood pins so the sleeve will set up snugly as it should on the shank. Loosen the adjusting bolt and set the sleeve for shovels at a 57-degree angle. The heavy line angle on page 46 can be cut out, and pasted on a piece of heavy cardboard; then cut the cardboard to the heavy line,



Set the Shields Properly; They Will Save Much Young Corn.

and you will have the proper angle for setting cultivator sleeves. The rig frame should be level when the sleeves are so adjusted.

In the cotton country, where sweeps are used extensively, there are so many different styles and shapes of sweeps that no angle can be recommended for setting the sleeve. Farmers skilled in the use of sweeps, however, make this adjustment frequently enough so that they are familiar with it.

Fourth—Take a look at your rig couplings—if they are loose and "sloppy," take up the wear. You will find means for making this adjustment on practically all makes of cultivators. Set the couplings up so they will work freely without being loose enough to permit the rig to wobble when in operation.

Fifth—Remove the wheels; clean both the axle and box with kerosene, and apply a good quantity of fresh grease. If wheel box is worn badly, replace with a new one. It will pay you to do this, because the cultivator will be so much easier to control.

Adjust Lifting Springs Properly

Sixth—With the pole level, examine your lifting springs; grease the connections and adjust them so that the rigs balance to suit you. The proper adjust-

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Save You Oil

Tractors, like automobiles, work **right** only when your lubricating oil sticks to its job of **lubricating**. If any oil works up into the combustion chamber, it's being wasted, power is being lost and carbon troubles set in. And it's ten to one the cause is leaky piston rings.

No-Leak-O Piston Rings won't leak because they're **sealed with oil**.

The "oilSEALing" groove—a patented groove found only in No-Leak-O packs an oil film in between your piston and cylinder walls like "packing" in a pump.

This film prevents oil from working up into cylinder heads to form carbon and keeps "unburnt" gas or kerosene from seeping down into the crank case to weaken lubrication. It also **seals in** all the expanding gas. Every drop **must** work.

No-Leak-O gives you **perfect oil control and compression in each individual ring**.

For less oil and gas consumption, fewer repairs, longer life and more **power**, get No-Leak-O Piston Rings for Tractors, Trucks, Automobiles and all Gas Engines. They withstand the punishment of heavy duty.

Jobbers and Dealers: Write today for literature and liberal dealer proposition. Let us tell you how our National Advertising helps bring you business.

Write for interesting booklet "The Piston Ring Problem and Its Solution", telling why No-Leak-O does what **no other ring can do**.

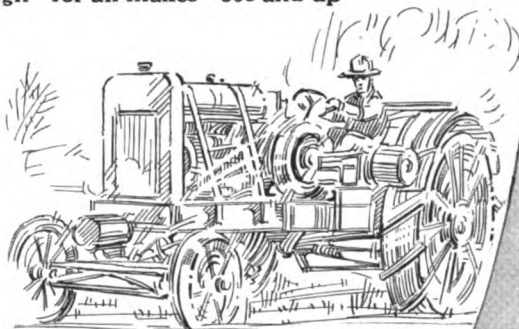
Read This Sign

Remember it—Look for it. It marks a Garage or Supply Store that is "live" and dependable. Even if your Garage Man doesn't display it, tell him you must have No-Leak-O Piston Rings for your next tractor overhauling. Beware of imitations.

No-Leak-O Piston Ring Company

Dept. F-1
BALTIMORE, MD.

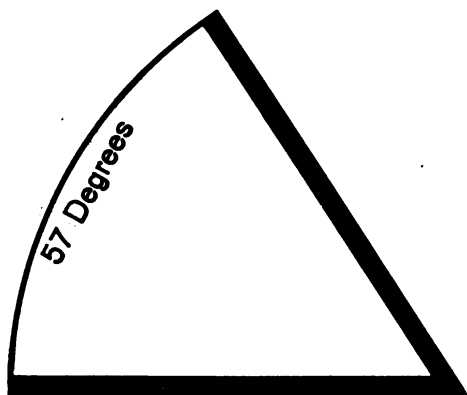
One Price During Eight Years of Continued Success
One design—for all makes—50c and up



WON'T LEAK

because they're sealed with Oil

ment of the lifting spring saves much hard work in the field. On most cultivators means are provided for increasing or decreasing the leverage exerted in lifting the rig thru the spring. A short lever and tight spring will give you better results than the long lever with



Sleeves Should Be Set at 57-Degree Angle.

all loose springs, because in the latter case, with the lifting spring set near the end of the lifting arm, it will have to be fairly loose to permit the rig to penetrate properly; then, in lifting the rig, when the rig is about half way up the spring lets go, leaving the operator to lift the dead weight of rig remainder of way.

Seventh—Examine the pole connections where the

pole is bolted to the frame or arch of the cultivator. Many times this bolt has been allowed to remain loose, with the result that the pole is badly chewed up, either by frame bars or other connections, so that the cultivator is really loose on the pole connection. Arrange to get this back tight again; if necessary, use a heavy washer between the frame bars. Sometimes a heavier bolt will go thru the metal parts, taking up the wear that has taken place in the wood pole.

Oil Every Joint of Spring Trips

If your cultivator has spring-trip rigs, oil every joint of the spring trip thoroly. Limber up each trip by hand-tripping to insure every joint being in good working order. See that each spring is adjusted just tight enough to hold the trip when the shovel is at work.

And last, but not least, in the case of riding cultivators, have a look at the seat and seat bars. A loose, poorly adjusted seat is an annoyance to the operator every day he is in the field. Locate the seat where you want it, tighten it securely, and it will repay you in comfort many times during the season.

These are a few of the things that have come to me in my experience in the corn field, and if they help just a few of you fellows out this spring, I will have considered my effort in preparing this brief discussion well repaid.

Distributing American Corn

Pathetic Scenes in Russia as Contributions of Members of American Farm Bureaus Arrived to Save the Starving

THOUSANDS of members of the American Farm Bureau contributed corn to the American Relief Administration for transportation to the starving people of Russia. The great good this food did and the gratitude of the people who received it may be realized by the givers of the corn from the following description of scenes at one of the relief depots:

Tzaritzin, Soviet Russia.—Pathos and hysteria, delight and anguish, marked the issuing of the first American corn to the natives of a starving Cossack village just across the Volga from this city. The haunting fear that the ice in the river would break up and transportation across it stop before the last convoy carrying the precious grain should arrive, obsessed the peasants for a few weeks. For days they had been watching long camel trains wind out over the ice, move slowly up the eastern bank of the river and pass on thru their village to the east.

For the American Relief Administration mission at Tzaritzin, distributing headquarters for the district, adopted the policy of issuing corn to the farmost zones first, where famine raged the worst.

A few days ago, however, word went forth to the river village that their corn was coming. Eager peasants—men, women and children—lined the bank to watch the crossing. The ice was very thin and a driving sleet and wind blowing across the river was likely to finish it, they feared. Already there were many holes that were to be

avoided skillfully as the snow was covering up the trail.

Then came the head of the long train. Here and there a nimble-footed Cossack pony tugged along in front of a camel, carefully picking his way across the pocked trail. Sometimes water swept across the path and wide open stretches of it had to be encircled. One team plunged thru—they travel about 20 yards apart—and the others gave it a wide berth. The drivers swore and shouted, fastened ropes around the animals, and with the assistance of a few pairs of oxen dragged the struggling, protesting dromedaries out of the cold waters.

The corn reached the east bank. Everything was ready for its arrival. The village committees, organized last fall for child feeding, had been drilled in the procedure to be followed in distribution. Long before the corn had been transferred to temporary warehouses crowds of peasants formed below the doors. Some had been left out of the distribution in favor of others more needy. They declared loudly that they could not live much longer unless they, too, were given a ration.

And to the American watching them, the statement did not seem untrue. Ragged and unkempt, red-eyed and thin, the inhabitants of one small village presented the same appearance. Very little difference could be detected between those that had been selected for the ration and those that had not. As one executive of the American Relief Administration put it, "you could drive a wagon load of corn thru the village and throw it off anywhere and it will do almost as much good as it will this way."

Finally everything was ready for the distribution. The



TRACTOR PRICES SMASHED! HART-PARR "30" Cut to \$ 895

Smashed to smithereens! Just think of a \$700 cut on this tractor from the 1921 price.

Hart-Parr Company has for twenty-one years lead the world in tractor quality. We are determined to not only maintain our lead in the tractor business but to price the Hart-Parr "30" so low that every farmer can own one.

This cut of \$700 is on the same tractor, with many improvements, which has, in the last few years, won with spectacular ease the important economy and power tests. This new price gives the world the cheapest farm power known.

Our exceptional financial condition and manufacturing ability to meet the demand which it will create, permit us to make this reduction.

Compare This Price With Farm Products

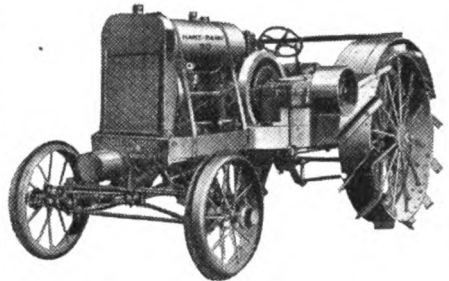
Figured in pounds or bushels, the new price, \$895, places the Hart-Parr "30" on a level below pre-war prices for farm products. Using Chicago market prices as a basis you can now buy a Hart-Parr "30" for 663 bushels of wheat as against 1423 in 1913; 1530 bushels of corn in 1922 as against 2072 bushels in 1913; 40 two hundred pound hogs now as against 78½ two hundred pound hogs in 1913.

There is no refutation of these facts. Now is the time to buy your Hart-Parr. Don't wait until the price reduction produces a waiting list of deliveries. Order yours today.

HART-PARR COMPANY

Founders of the Tractor Industry

497 Lawler Street Charles City, Iowa



Many of the old Hart-Parrs that plowed the virgin prairies of the Northwest are still in use today. The great grand-daddy of all Tractors was old Hart-Parr No. 1, built in 1901.



crowd rushed for the doors of the building. A rumor was spread among them that there was not going to be enough to issue to all those who held tickets. Those who were strongest fought their way thru the storming mob. Others cried until they were reassured that they would be taken care of without fail. Some became hysterical and screamed. One woman fainted from sheer weakness and it was doubtful whether she would live long enough to see the American corn.

Inside, however, everything was orderly. A big Russian was directing operations. Calling out loudly to those who insisted on getting out of line that he would make them wait until last, he maintained rigid discipline. Several lines formed and as the peasants approached the counters they presented their tickets, entitling them to 30 pounds, or a ration for a month, watched the weighing with appraising eyes, received back their sacks filled with corn and made their various ways back to the doorway to fight out to the street.

Now and then one would find a stone or a piece of wood in his sack and bring it back to be replaced with an equal amount of corn. Some shouted with delight as they received their sacks and charged for the door in most un-Russian fashion. One aged woman with deep furrows in her tanned cheeks pushed slowly thru the crowd, mumbling to herself and laughing at intervals in a harsh, rasping voice. Outside she sat down and cupping her hands, scooped up several handfuls of the yellow corn, letting it trickle between her fingers back into the sack, talking meanwhile as a miser might to his gold.

From the storehouse the procession led to a mill at the edge of the village where arrangements had been made to grind the corn without charge. Great surprise was expressed by the peasants at the quality of the flour. Their own corn, they explained, loses about 17 per cent in the milling and is of a much coarser grade. The American corn returned them a fine yellow flour with a very small loss. Some of the shrewd farmers tucked away a handful of the kernels to plant when the snow melts.

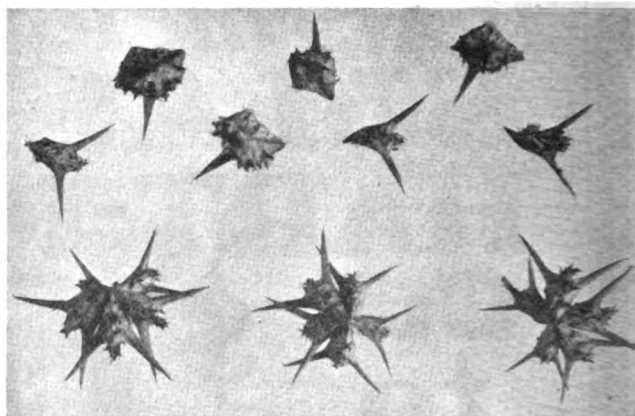
Asked how they were going to prepare the flour, the women smiled. Corn bread is not new to them, it was explained, altho there has been no corn harvested in this section in nearly two years. They also have some native ways of preparing corn flour. The American Relief Administration has issued recipes for the various usages of the flour, but it is believed bread will be the most popular

verdict. Perhaps not the kind "ole mammy" used to make, but it fills the empty stomachs and will save many thousands of lives.



Beware of Puncture Weeds

FARMERS of the middle western states who own automobiles want to be on the lookout for puncture plants this summer as this pest of the Pacific coast, which is the terror of California and Arizona



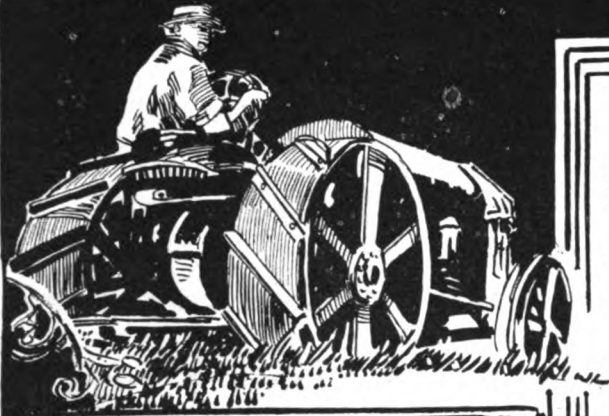
Puncture Weeds, Showing the Sharp Points, That Work Havoc with Auto Tires.

motor car owners, has been introduced in large numbers to the corn belt and adjoining states. The puncture plant is a wayside weed common in parts of the southwestern states. It produces many barbed burs which are blown about by the wind to be deposited in the dust of the highway and along the main lines of automobile travel. When one of the sharp darts or prongs of a puncture plant get in an automobile casing, the owner of the car is sure to suffer a continual sequence of punctures until he locates and removes the needle-like point. One Californian had 74 punctures during a three-hour automobile journey as a result of the energetic activities of these pests.

It is estimated that 50 per cent of all the bicycle punctures and 25 per cent of the automobile flat tires in California are caused by puncture plants. Farmers can aid in eradicating this new pest of the corn belt states by becoming familiar with the plants and digging up and destroying all the specimens that they come across. Fields that are badly infested should be plowed and thereafter planted to some cultivated crop. Wayside weeds along the main lines of automobile travel should be cut at regular intervals thruout the summer and burned over in the fall in order to prevent any of the objectionable plants from going to seed. It is only by unified drive that any satisfactory results can be accomplished.—G. H. D.



Starving Russians Gathered at a Relief Station to Receive the Corn Contributed by American Farmers.

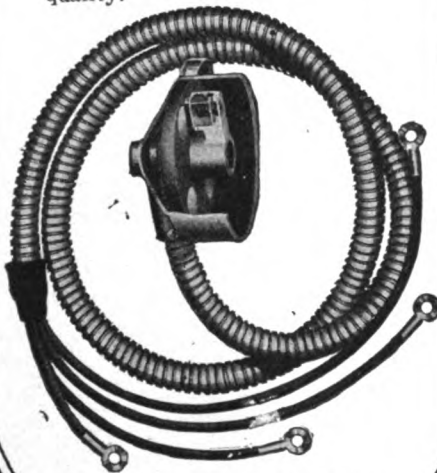


The Turner Timer Will Increase The Efficiency of Any Fordson Tractor

The Turner Two-In-One Timer is receiving the stamp of approval from Fordson Tractor owners everywhere.

The dealer who is not taking advantage of the demand for this high grade accessory is overlooking a real market in his territory.

The new price is exceptionally low for a product of such genuine quality.



For All Ford Motors
\$3.60

THE TURNER **2^{IN}1** TIMER

Made For All Ford Motors

THE TURNER TWO-IN-ONE TIMER for Ford Motors, tried and tested over a period of five years, is breaking all previous sales records. It sells because it is a product of genuine quality that performs the functions that a first-class timer is supposed to perform and does so efficiently and economically.

The TURNER TWO-IN-ONE TIMER requires *no oiling* and recent actual tests have proven that it will run for 50,000 miles without attention.

A TURNER TIMER on your Ford car, truck or tractor will give you increased power on hard pulls, an instant start in all weathers, decreased gasoline consumption. In many cases it stops the fouling of the two front plugs. It is oil, grease and waterproof. Eliminates "kicking" from shorted timer wires. Furnished complete with wiring assembly in oilproof and waterproof metal conduit. Fully guaranteed.

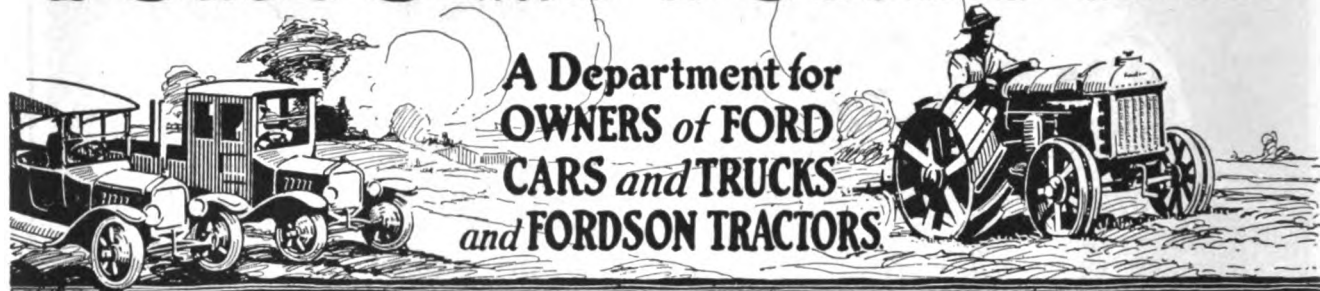
Every Ford owner and every automotive dealer should know more about it. The manufacturers invite you to write for further information.

*Write us today for information concerning the **Turner Instant Foot Accelerator** for Fords and the **Turner Spring Leaf Spreader and Lubricator***

Turner Manufacturing Co.
Kokomo, Indiana

TURNER

FORDS *and* FORDSONS



Tractor Breaks Mountain Trail

Fordson, Equipped with Wide Treads, Negotiates Snoqualmie Pass, in the Cascade Mountains, of Washington, and Reaches Summit Where No Other Motor Vehicle Ever Has Been in Winter

BREAKING its way thru snow that ranged from two to 12 feet deep, a Fordson tractor equipped with special treads, made its way from Camp Mason, at the foot of Snoqualmie Pass, in the Cascade Mountains, near Easton, Wash., to the summit, a distance of 15 miles. The trip was made in nine hours and at no time were the drivers required to use shovels.

This is an extraordinary performance.

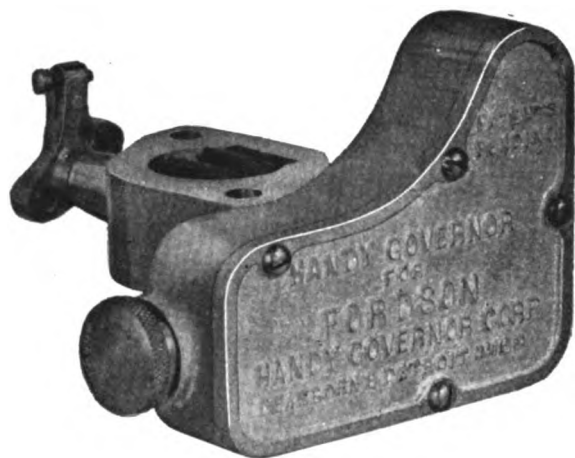
The Snoqualmie Pass heretofore has been closed by snow to motor vehicles between November and the latter part of May, the last automobile to make the trip having come thru the pass November 17. Besides, the snow in many places was melting, the drifts made the snow of different depths, and the going was difficult. Nevertheless, the tractor kept to its work and made the trip without great difficulty.

The tractor was driven by R. D. Joliffe and H. G. Schreiber, of the Seattle Ford branch, accompanied by Stanley Jacobs, shop tractor service man and Jack Dale, representative of the Miller Tractread. Interested followers of the exploit were Lieut.-Gov. William J. Coyle, of Washington, and Thomas R. Beeman, highway engineer of King County.

As will be seen by the illustration the



Nearing the Summit of Snoqualmie Pass, in the Cascade Mountains, Showing the Fordson Breaking Its Way Thru the Deep and Drifted Snow.



THE HANDY GOVERNOR

FOR
FORD TRUCKS AND
FORDSON TRACTORS

The Handy Fordson Governor
Nothing complicated, a simple, durable and efficient governor for the Fordson. It will be imitated.—Watch for the name—"HANDY."

"Congratulations on a real Fordson Tractor Governor."

That's the message of Philip Jerges' Sons, Ford dealers at Lancaster, N. Y., to us on the Handy. Like hundreds of other Ford dealers they have found that in the Handy operating efficiency and low price are combined.

A simple, durable and efficient governor at a price which insures, quick, easy sales is what the Handy offers you.

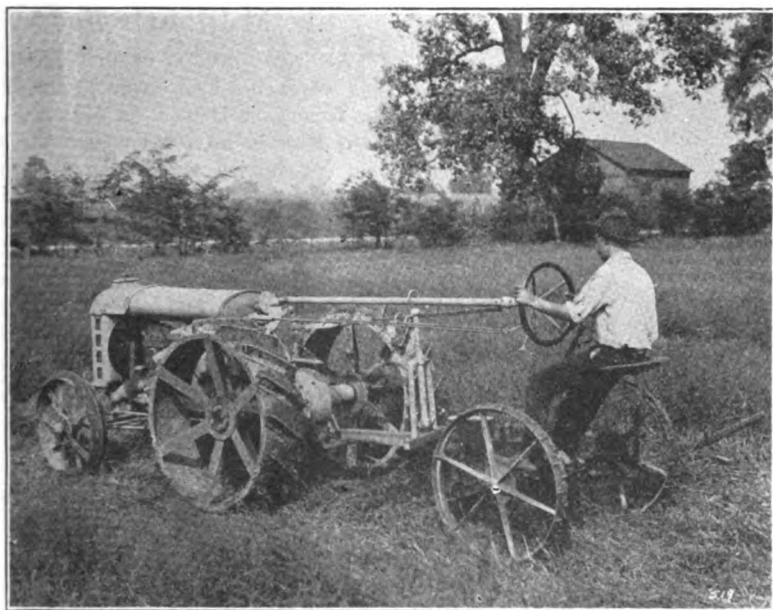
Don't wait until the busy belt work season presses in upon you and then try to get enough governors for your trade.

Order your supply of Handy Governors now to be sure and take care of all demands.

You will find our dealer proposition most interesting. Write or wire me today for full particulars

PRICE	WILLIAM FORD, Manager of Sales	PRICE
\$15.00	HANDY GOVERNOR CORPORATION, Dearborn, Mich.	\$15.00
RETAIL	<i>Originators of the Cam Control Governor</i>	RETAIL

The Dearborn Tractor Control



Dearborn Tractor Control Operating Fordson Tractor from Seat of a Mower

Designed and manufactured by Dearborn Tractor Appliance Co., Dearborn, Michigan, this device makes it possible to operate the Fordson and yet ride the grain binder, corn binder, mower, spreader, grain drill or other implements.

It gives absolute control of the clutch, gear shift and steering mechanism of the Fordson. Allows the farmer to save by using his horse drawn tools without using an extra man.

The Dearborn Tractor Control is mechanically simple, easy to operate and is installed by anyone in 20 minutes.

*Liberal Discount Allowed
Ford Dealers*

PRICE ONLY	\$25.00	F. O. B. DEARBORN MICHIGAN	DEARBORN TRACTOR APPLIANCE COMPANY
			DEARBORN MICHIGAN

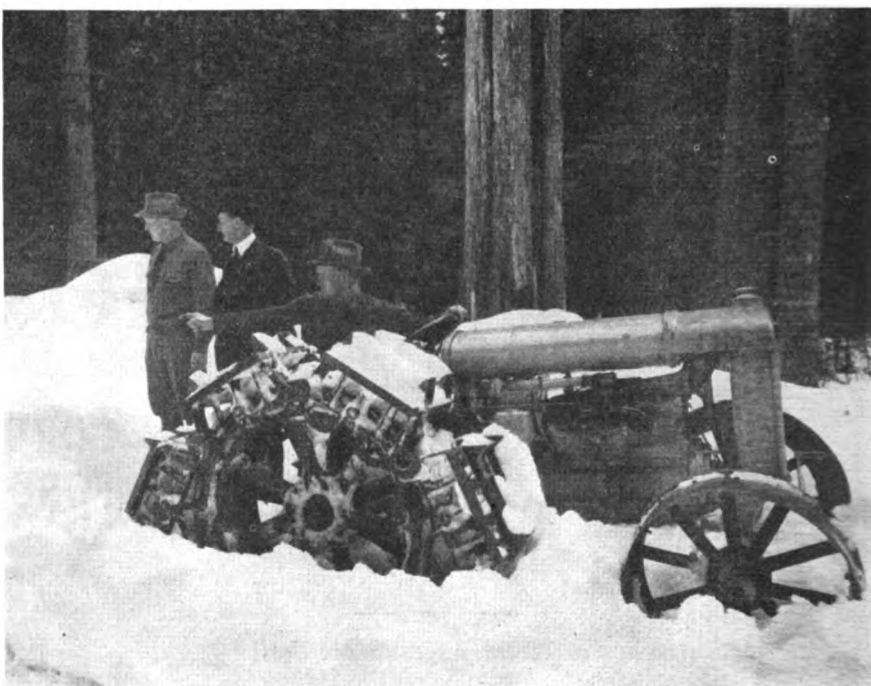
tractor wheels were equipped with extra wide treads and spike lugs. The treads furnished the traction and as the weight of the tractor caused it to sink into the soft snow a trail was packed that carried the machine along toward its goal. At times the front wheels were all but buried, but the treads enabled the tractor to keep moving, and, considering the conditions, the speed, approximately one and three-quarters miles an hour, is unusual, to say the least.

This, it is claimed, is the first time in history that a tractor has been put to the test of breaking a trail thru a snow-filled mountain pass. Traveling where the lighter type of automotive machine is unable to go also is a record.

Harvey Crook, of the U. S. Forestry Service, stationed at Summit Inn, at the summit of the Snoqualmie Pass, certified to the performance of the tractor in the following statement, dated April 20, 1922:

"At 6:30 p. m., this date, three men with a Fordson tractor, equipped with [special] treads, arrived at this point. This is the first motor vehicle which has been here since November 17, 1921. The snow reading today at 5 p. m. was 7 feet, 2 inches. The Fordson was breaking its own trail from the Postal Telegraph Station for 8 miles from this point."

The conditions encountered by the tractor are shown in the illustrations, which are reproductions of photographs taken at different points in the Snoqualmie Pass during the trip to the summit. The largest of the three pictures shows how badly the snow had drifted along the trail, while another pictures the trac-



The Fordson That Traveled 15 Miles Thru Snow Two to 12 Feet Deep Up the Snoqualmie Pass.

tor in some hard going, the soft snow allowing it to sink nearly to the wheel hubs, despite the wide treads on the wheels.

County Engineer Beeman, after witnessing the performance, made this comment:

"The Fordson with [special] treads performed very creditably and after witnessing its performance in breaking a trail thru fresh snow, I was not surprised at the record it had made of breaking its own way up grade to the summit thru snow varying in depth from

2 to 11 feet in 9 hours time."

Representatives of the Ford Motor Co., who also watched the performance, were enthusiastic over the accomplishment, which was due not only to the power of the tractor but the traction obtained from the treads. They see in this demonstration proof that where sufficient traction can be secured in sand, mud, snow or any other sort of soft going the Fordson will go thru.

Six Millionth Ford

CAR No. 6,000,000 of the Model T. Motor Ford Car was produced in the factory at Detroit on May 18.

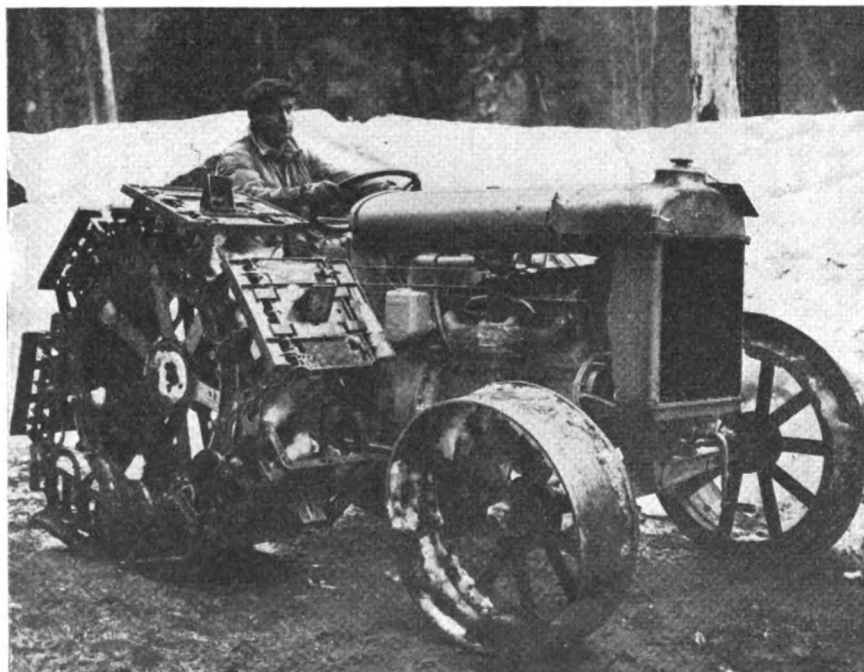
On May 16 all previous records for daily production of Ford cars were beaten when 4,878 complete automobiles were turned out at the close of the day's work.

On the working day just prior to the 16th, 4,862 Ford cars were built.

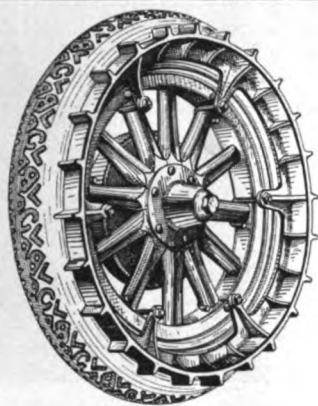
The production of Ford motor No. 6,000,000 on May 18 means a total production of Ford cars in the 355 days following May 28, 1921, of 1,000,000, as motor No. 5,000,000 was finished on May 18, 1921.

While the record output of 130,000 cars is called for in the Ford production during the month of May, these colossal figures must be exceeded in June of this year, for which month dealer specifications for cars, trucks and tractors already stand at 194,750 complete units.

Ford sales are now at the highest peak in the history of the Ford Motor Company, the demand during the last two months growing faster than even



The Fordson Equipped with Wide Treads, Ready for the Trip Thru the Snoqualmie Pass in the Cascade Mountains of Washington.



Our circular shows details of various designs for all makes of wheels and special reinforced, made to order rims.

100% Traction

No more delays for bad roads. Equip your truck (solid or pneumatic tires) with FOLEY TRACTION-RIMS and go anywhere, road or no road.

These rims are made from electric steel and will fit any make of truck wheel and can be attached or detached in twenty minutes.

Send for circular and prices today.

FOLEY TRACTION-RIM CO.

109-111 So. Tenth St.

Minneapolis, Minn.



BEACON LIGHTS OF BUSINESS

Along perilous coasts, lighthouses throw their guiding rays far into the night to warn the mariners and help them safely pass the shoals.

Business, too, has its beacons. They are the *advertisements*, which throw a powerful light to guide you in your buying. They show you what to buy, when to buy and where to buy.

Spend a few minutes reading the advertisements in Farm Mechanics. Then buy the products that have proved up in the light of advertising.

Manufacturers who advertise deliberately focus thousands of eyes on their products. Their wares must be *good*, their values *honest* and their prices right, or they could not advertise successfully.

In these advertisements you see products that have made good under the critical inspection of buyers. These products are *full value* products. They return dollar for dollar. Buy them.

Let the beacon of advertising guide you as it is guiding so many careful buyers.

—FARM MECHANICS.

Alloy Steel on the Farm

Mower and Binder Crank Shafts, Pitmans and Sickle-bar Heads are examples of farm implement parts that should be forged from Alloy Steel.

The same is true of heavy-duty gears and pinions on many farm machines.

All parts that are subjected to high-speed working stresses, to twisting strains, or to excessive vibration will stand up better under the severe punishment of farm work if they are made from Alloy Steel instead of ordinary steel.

Make a list of all the repair parts that you have had to buy on all farm machinery for several years back, including tractors, trucks and automobiles. Such a list will tell its own story of the need for a better grade of steel for such work.

Remember Alloy Steel whenever you are put to delay and expense by the breaking of a part of any farm machine; and tell your dealer to write to the makers of the machines that they should use Interstate Alloy Steel to meet the requirements of that kind of service.

Interstate Iron & Steel Co.
104 S. Michigan Avenue
CHICAGO

WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS



Fordson Plowing Demonstration at the Cambridge Tractor Show.

the most herculean efforts in increased production can take care of.

Out of the total of 6,000,000 Ford cars and trucks which have been built in the past fourteen years, 5,517,956 have been delivered to purchasers in the United States, and of this number 4,788,248 are still in daily service, according to the most recent statistics.

This is 80 per cent of the total number of cars sold in the fourteen years during which the present model has been built.

States in each of which over 200,000 Ford cars and trucks are now in daily use, include Ohio, Illinois, Pennsylvania, Texas, Michigan, New York, Iowa and California. Ohio leads with a total of 290,769, all other states following in the order given.

The ratio of distribution in proportion to population is almost uniform in all parts of the country, from the densely populated cities to the sparsely settled parts of the West.

Approximately four and three-quarter million cars and trucks in service means one to every five families in the United States.

Stage Fordson Tractor Show

THE Ford Motor Company and the Ford dealers of New England held the first industrial tractor show in this section of the country the week of May 8-13. The show was held in the lot adjoining the Cambridge Ford plant. The object was to demonstrate that the tractor is a valuable contribution in solving the problems of the New England farmer, contractor, manufacturer and municipalities.

To bring the show immediately to the attention of the people it opened with a parade thru the main streets of Boston. Thirty tractors, each doing some kind of industrial work, were in the parade.

The exhibits were housed in a large tent, and the lot near the Ford plant was used for demonstration. The show was open from 10 a.m. until 10 p.m., and thruout the day various kinds of work that can be done with the tractor were demonstrated. Among the demonstrations are the use of tractors in the hauling of railroad ore cars over trackage, the hoisting of bucket con-



The Farm Sawmill Operated by a Fordson Was a Center of Interest at the Cambridge Show.

veyors by means of winches operated by tractors, the operation of stationary and portable saw mills, the use of all types of roadmaking machinery, actually demonstrating the building of better roads.

The lighting for the show was operated by tractor power. An electric lighting plant of 300,000 candlepower capacity is used for this purpose.

Many large industrial concerns sent groups of men to study the various utility factors. The entire purpose of the exhibit is practical. Students from the leading schools in Boston and vicinity attended and profited by the demonstrations. Each exhibit was attended by men ready to answer any questions and the economy of the work done by the tractor.

The most spectacular demonstration and the one that drew the largest crowds were the two stationary saw mills. Huge logs were sawed by tractor power.

More than 40 concerns were represented in the exhibit, all of which perfected plans to show every detail of operation of their various products.

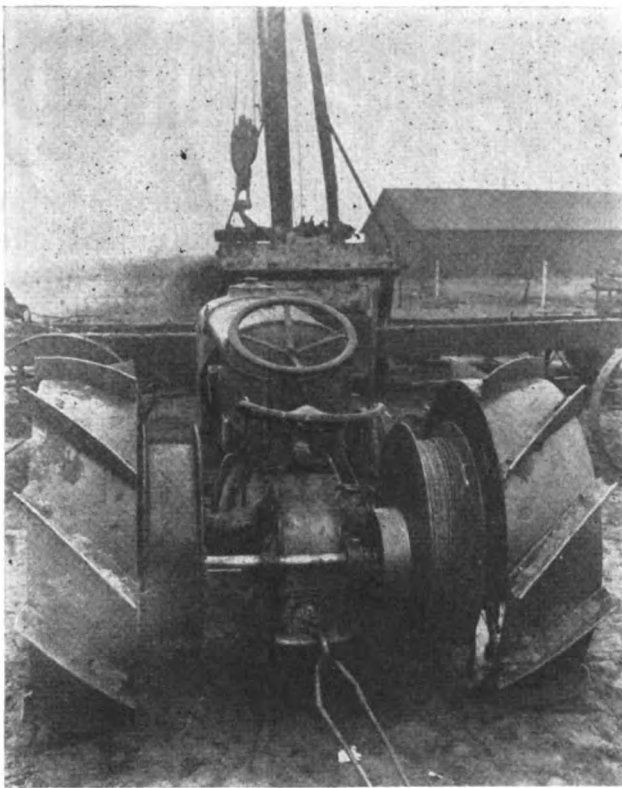


Winch Built Into Fordson

THAT the tractor is being used more and more as a mobile power plant—a plant which may be moved under its own power from place to place and which will perform all sorts of jobs that require considerable power—is being demonstrated frequently. Attachments that will accomplish desired results are numerous; others are being built into the tractors.

Shown in the illustration is a winch that is built into the Fordson tractor. This winch is designed for use in stump pulling, pile driving, setting poles of all kinds, and in oil fields, stone quarries and for any sort of work that requires a straight vertical lift. It is strong and durable and will last the lifetime of the tractor. The installation is simple and not costly.

The drive of the winch is thru worm and worm wheel and full tractor power is available together with the flexibility of three speed and reverse tractor trans-



Fordson with Built in Truck in Operation in the Texas Oil Fields.

mission. The brake is on the counter shaft with a six to one reduction, which gives safety thru increased leverage and smooth, easy operation.

The drums are 26 inches in diameter, which gives speed combined with power thru the use of the transmission. The face of the drum is 7 inches wide and has a capacity of 1,000 feet of ¼-inch line. The line usually is run on the right-hand drum, the other being used as a nigger head. This drum equalizes the assembly and has an internal gear meshing with steel pinion of the same on the right-hand drum, which, thru the countershaft, compensates for the differential and gives a direct drive thru the worm and worm wheel and axle shaft. The left-hand drum also can be used for snaking the tractor and load out of bog holes. Special wheels with extra hubs are furnished with the winch.

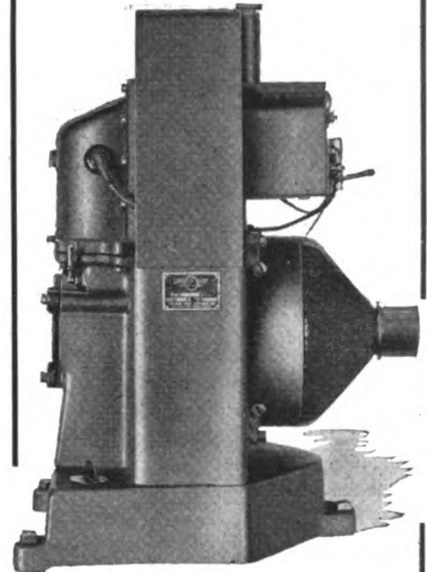
One of the special features of this winch is that the operator sits on the tractor seat and faces the work. No governor on the tractor is necessary, as the operator controls the power at all times thru a foot accelerator.



Articles Useful

IFIND FARM MECHANICS very interesting. It certainly has a lot of useful things in it, and it is well worth the money paid for it. With best of luck to FARM MECHANICS.—A. HERRLING, Black Earth, Wis.

LINCOLN Individual Electric Systems



Simple Durable Economical

Lincoln Light offers a bigger and better Generating Unit (1½ KW) and Oversize Battery at a lower price, complete with power pulley and compensating hydrometer.

Only 3 Moving Parts.
Lincoln Light dealers save on service.

Self cranking
Self oiling
Self stopping

**FIVE YEAR GUARANTEED
BATTERY**

Dealers, write for territory

**LINCOLN
Light Corporation**
Grafton, Wisconsin

Our Implement Inspector



HE finds much new and worth-while farm equipment offered to increase efficiency and cut down labor.

EDITOR'S NOTE: Farm Mechanics does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address Farm Mechanics Information Exchange, 1827 Prairie Ave., Chicago.

Extension Drive for Fordsons

AN extension drive permits the operator to sit on the machine drawn by the tractor and control both the tractor and the implement, whether it be a tillage or harvesting machine. These drives are so attached to the controls of the tractor—throttle, clutch and steering gear—that the driver can operate them as efficiently as tho he were on the tractor seat.

Shown in the illustration is a Fordson tractor attached to a potato digger. The Fordson is equipped with a special extension control, which permits the driver to operate both machines, thus saving the services of one man. This drive was designed by a man in close touch with the Ford organization, and is in general use by Fordson owners. The steering apparatus is controlled by a bevel gear, while the pedals are operated by lines running along the extension steering rod.

This tractor also is equipped with a governor, designed by the same man, which controls the speed of the engine under all conditions, whether the load is light or heavy.

The combination of extension control and the governor make the Fordson a

one-man operated machine while doing all farm work.



Reinforced Concrete Fence Posts

REINFORCED concrete fence posts have come into general use because they are well nigh indestructible. In the illustration are shown posts support-

livered to the purchasers ready to set. They are reinforced by square, twisted steel rods and by a patented process are set into the corner of the posts, giving them a maximum of strength. Tests have shown that these posts will support a weight of more than 1,200 pounds hung in the center while the posts were supported at the ends.

The manufacturers claim that staples



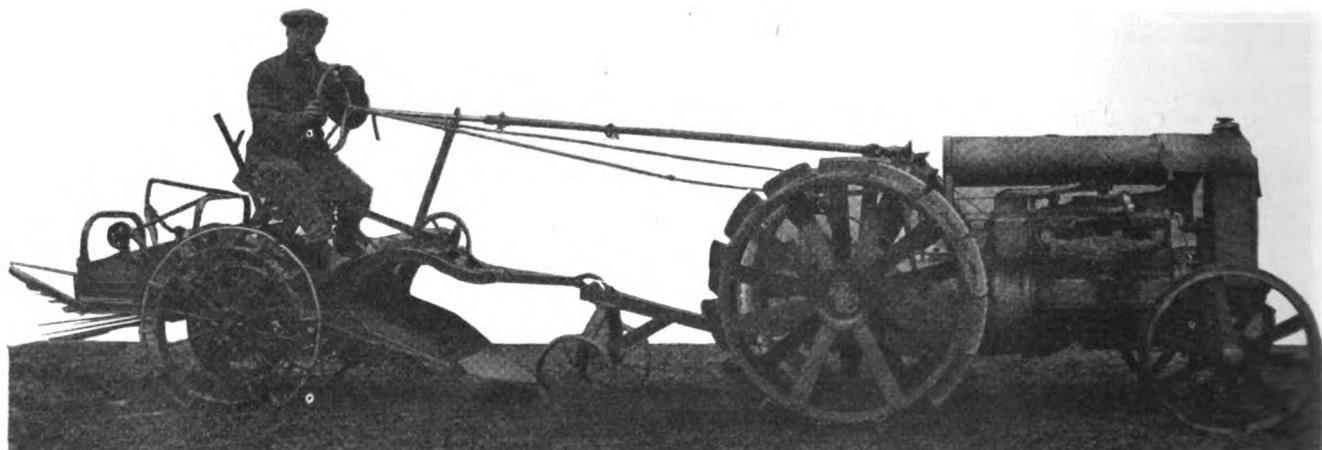
These Posts Have Been in Place Fifteen Years and None Has Cracked or Broken, Nor Has a Staple Pulled Out.

ing a wire fence, the men standing on it showing how secure the fence is fastened to the posts. This is made possible by the posts being so constructed that staples may be driven into them securely.

These posts are manufactured and de-

may be driven into the concrete as easily as into wooden posts. This eliminates iron attachments projecting from the posts and makes a neat looking fence.

Good fences give the farm a better appearance, keep the stock confined in



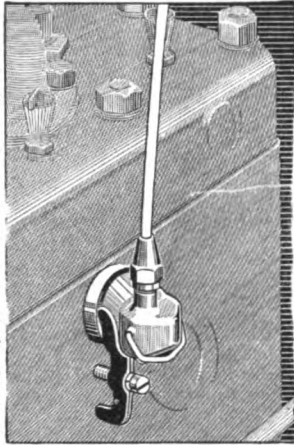
Fordson Equipped with Extension Control and Governor Making It a "One-Man" Outfit for All Kinds of Field Work.

the pastures and with concrete posts last for generations.



Auto Engine Heat Indicator

AUTOMOTIVE engineers have keenly realized the need of an accurate instrument for recording the temperature variations of internal combustion motors. There has been perfected an entirely new type of instrument, which correctly records the true temperature existing at the motor, on a gauge dial that is installed on the instrument board, where it is always visible and easy to read, by day or at night, in rain, fog, mist or snow.



The Instrument That Tells the Autoist the Temperature of his Engine.

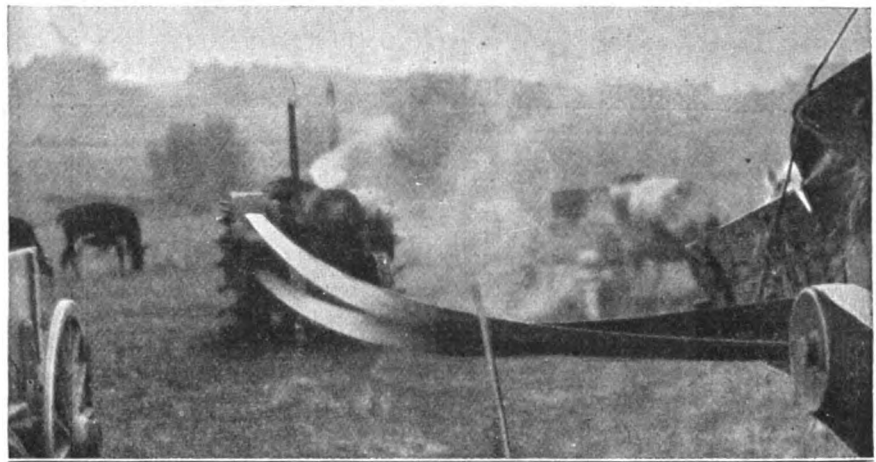
The actuating unit is clamped directly against the motor, as shown in the illustration, and contains a highly sensitive thermostat, of unique design, smaller in size, but positive in action, and any slight variation in the temperature of the motor causes it to expand or contract, in direct proportion to the degree of heat or cold. The temperature ranges are designated by contrasting colors, on the dial, which makes it possible for the operator to tell at a glance when the motor is cold, cool, efficient—or hot to the danger point.

A small gear segment and pinion are so connected that a turning motion is given to the flexible shaft, which connects the pinion with the pointer on the face of the dial. The principle of operation is purely mechanical, and entirely new. Each instrument is adjusted to record accurately the temperature variations of the particular motor on which it is installed. It is easily installed, and permanently adjusted by a mechanic, and when correctly adjusted, it operates automatically, accurately and efficiently.



Each Copy Worth \$1

MY suggestion to making FARM MECHANICS a better paper is to keep on like you have in the past, for I like every copy better and better. Each and every copy is worth \$1.00.—IRVING P. GARD, Crown Point, Ind.



LOOK AHEAD TO THRESHING TIME



Goodyear Klingtite Belt in community threshing service at Springfield, Nebraska

Now is the time to decide on your belting equipment for the threshing season that will soon be here. You will want economical, powerful, trouble-free belting. You can have all those qualities at their best in the Goodyear Klingtite Belt.

Four farmers, all good friends, Henry Becker, Joe Sedlacek, and Peter and Arthur Anderson, of Springfield, Nebraska, went in together to buy a Goodyear Klingtite Belt in July of 1920. They threshed all their wheat that season, the crop of several other farms—more than 350 acres of wheat and oats—repeated the performance last year, and used the belt in corn-shredding and silo-filling after threshing was over.

They never lost a minute on account of belt troubles. Their belt, like all Goodyear Klingtite Belts, needed no breaking in. It required no belt dressing. It held the pulleys in a firm, slipless grip, delivering full power, favoring the engine bearings, and eliminating engine resettings. It still looks good for seasons to come.

Goodyear Klingtite Belts are all-weather belts. They are not affected by heat, cold or damp. Their Goodyear ply construction gives them long life; they wear evenly and do not separate at the plies. Designed and built for farm power service, they have a nation-wide reputation as the best help on the farm.

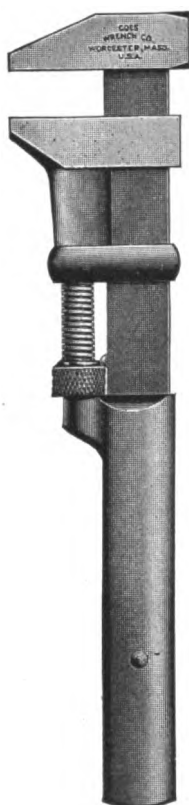
Your local dealer has Goodyear Klingtite Belts. They are made in endless type for threshing, silo-filling, feed-grinding, wood-cutting and other heavy duty, and in suitable lengths for lighter duty, such as cream-separating, milking-machine, electric light generating, water-pumping, churning and washing-machine drives. For further information about them, write to Goodyear, Akron, Ohio, or Los Angeles, California.

GOODYEAR
KLINGTITE BELTS

Copyright 1922, by The Goodyear Tire & Rubber Co., Inc.

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

COES WRENCHES



On the modern farm where everything is being done by machinery, you will find that Coes Wrenches are helping to keep each and every machine in first class running order.

Coes Wrenches are built to give better service and last longer than any other wrench on the market.

*For sale by all good
dealers*

Coes Wrench Company

Worcester Massachusetts

WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

Better Gas for Fords

INCOMPLETE combustion of the low-grade gasoline that is now generally sold causes motorists all sorts of troubles. Fouled spark plugs, carbon in the cylinders and thinned oil are some of the results of unburned gas.

Shown in the illustration is a device for Ford cars that, it is claimed, eliminates these troubles. It is attached between the carburetor and manifold and the mixture of gas and air passes thru it before being drawn into the cylinders. A small fan that is revolved by the gas mixture acts on the same principle as a cream separator. All the liquid particles in the mixture are thrown against the outside walls of the passage. These, by contact with the cylinder walls, are heated. The liquid is thus converted into gas and is drawn into the cylinders in the proper form for exploding.

Tests made with Ford cars to which this device was attached have shown that from 20 to 40 per cent more mileage is obtained from a gallon of gasoline. Also all dust particles are separated from the air stream and do not get into the cylinders. There is less carbon, cleaner spark plugs and more smooth running motor with this device attached.

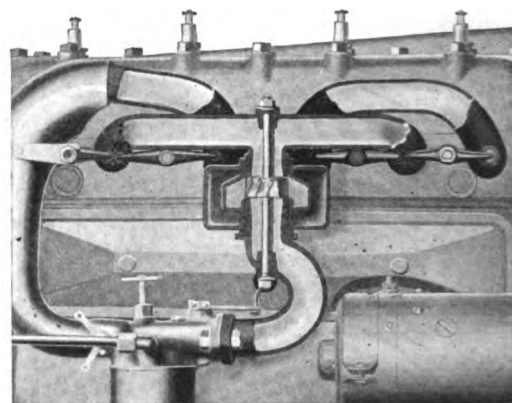


An All-'Round Tractor

A LOW-PRICED tractor that the manufacturers claim will perform every power requirement about the farm, from spring plowing thru the cultivating and harvest seasons to the final field work of the year in the fall, is shown in the accompanying illustration at work in a corn field. By a unique arrangement

of a two-row cultivator fastened at the front of the tractor, the operator drives thru the field and is in position to see exactly what the cultivator is doing. With this cultivator it is claimed that from 10 to 20 acres a day can be covered, and the outfit can be used until the corn is five feet high.

This tractor has the power to handle



Cross-Section of Device That Insures Mixture of Gasoline and Air Before It Goes Into the Cylinder.

a two-bottom plow and will cover from six to eight acres a day. Besides its narrow tread, the width between the outside edges of the crawlers being only 32 inches, permits it to travel between most row crops. The treads are eight inches wide, which gives excellent traction in almost any type of soil. It can be used for discing, cultivating, seeding, harvesting, and is equipped with a pulley that makes it available for all belt power jobs about the farm.

Built of chrome steel, one of the strongest of metals, the tractor is simple in its mechanical construction. There is not an oil or grease cup on it, the lubrication being supplied automatically. The crawler tread gives it traction in all



Tractor of the Crawler Type That Is Specially Designed to Cultivate as Well as Do Other Tillage and Harvesting Work.

sorts of soils, sandy, wet or hard. It is furnished to the purchaser complete, there being no extras required.



Safety Service Can

THE service can is designed to furnish a convenient, quick, safe and economical means of handling fuel and lubricants.

No matter how obstructed by tires or inconveniently located the opening of the fuel tank may be, it is readily reached by the flexible steel hose of the service can. The need of special funnels, so easily forgotten or lost, is thus eliminated.

When the oil or gas is stored or transported, the nozzle on the flexible steel hose is inserted in the vent in the screw cap, as illustrated in the photograph, thus rendering the can practically airtight and preventing evaporation, con-



Device Can for Autos, Trucks and Tractors

tamination and spilling. When the nozzle is withdrawn from the cap, preparatory to discharging the contents of the can, the open vent insures a free flow of the liquid.

Danger from fire in both public and private garages and in service stations will be greatly reduced by handling inflammable liquids in this sealed container.

By removing the screw cap a large opening for filling is afforded.

The service can will be found especially useful to garages and service stations for transporting gas in the service car to cars which have run out of gas on the road. Valuable time will be saved and the service to the customers will be improved by keeping several cans filled and ready for service. When the mechanic loads this can on the service car, he has nothing further to think or worry about. There are no funnels to be left behind or lost and there is no

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In every locality there's plenty to do. You'll be busy 7 to 10 months in the year. The income is from \$15 to \$20 a day, the expense little. Mr. Opfer is only one of many of our friends who are making that much and more with a

"A Perfect Trench at One Cut" BUCKEYE Traction Ditcher

With one helper you can dig more ditches each day than can fifteen men by hand. You make a perfect ditch at one cut. Farmers want traction ditching—it's better, can be done quicker and at less cost. When they know you have one, you'll be kept busy; you won't have to look for work, it will come to you. Many Buckeye owners have six to twelve months' work ahead. \$15 to \$20 daily is the net average earnings of hundreds of Buckeye owners. Here is a proposition that will give you a standing and make you a big profit each year.

Send for Free Book

A book of solid facts, tells how others are coining money, how they get the work, how much it costs to do it and all the details of operating.

Our service department is at your call to get you started and keep you going, to tell you the prices to charge and how to make big money with a BUCKEYE. Send now for this book, you can make big money too.

THE BUCKEYE TRACTION DITCHER CO.
537 Crystal Avenue Findlay, Ohio

READ THIS LETTER

I excavated a trench 16,000 feet long, average depth 25 inches. I received 1c per lineal foot, and or \$160 for the job, and operated the machine just 48 hours. The manager of that company had a length of 2,200 feet which he said would hold me down for the day. I just laughed at him. I tightened the governor to tighten speed and in 2 1/2 hours had the 2,200 feet finished. Average of 800 feet per hour for the two and three-fourths hours at 1c per foot is \$8.00 per hour.

JOHN C. OPFER, Sandusky, O.

Pump Both Hard and Soft Water

Attach a Dual Automatic Valve to your pump—you have soft water for the laundry and hard water for cooking, drinking, etc.

The Dual doubles the comforts and conveniences to be had from your pump. Entirely automatic; and nothing complicated about it. The cost is very moderate—it saves the cost of an extra pump.

Write us for illustrated pamphlet

DUAL AUTOMATIC VALVE CO.
BEST BUILDING ROCK ISLAND, ILL.



A Friend in Need

Last tube punctured—patches won't stick—you're ready to start home on the rim. Then along comes a helpful friend and shows you how to vulcanize that puncture for good in five minutes. He'll tell you that he wouldn't take ten dollars for the feeling of security his Shaler Vulcanizer gives him and advise you to get one at the next garage or accessory store you pass. You'll do it, and next time the emergency comes you'll thank your lucky star that you were prepared.

Cost Only \$1⁵⁰

Slightly higher west of Denver and in Canada

Vulcanizes boots, rubbers, gloves, coats, etc. No gasoline. Each Patch-&-Heat Unit contains its own fuel. A match is all you need.

C. A. SHALER CO.

2273 Fourth St., Waupun, Wis.
U. S. A.



danger of gas being spilled if the can turns over and the ashes of his pipe causing fire.

The car owner also will appreciate not only how much easier it is to fill his tank with this service can, but also how convenient and safe a means it offers to keep a supply of gas or oil on hand in his garage. When gas is purchased, it will enable him to measure the amount received and thus to insure full measure.

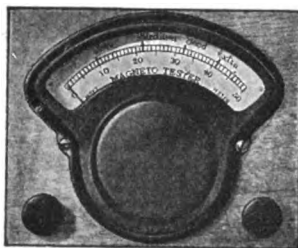
Tractor owners will find the service can of special value in carrying fuel to the tractor in the field.

A reserve supply can thus always be kept on hand in the field without danger of ignition from sparks and no valuable time will be wasted sending in when the tractor runs out of fuel.—W. H. R.



Ford Magneto Tester

MUCH of the trouble automobile owners experience with their cars is caused by faulty magneto operation.



Tester That Shows Whether Magneto Is Working.

A magneto tester that will show at a glance whether or not the magneto is performing its functions properly is shown in the accompanying illustration. This tester is designed especially for Ford cars. The connections are simple. One binding post is connected to the magneto plug and the other to the transmission housing as a ground. With the motor running at various speeds, the driver notes if the pointer touches the proper points on the scale. It can be taken for granted that a magneto showing "good" at any normal speed above 15 miles an hour, is in good condition for that speed. Such a magneto should at least show "poor" at 8 miles an hour, it being possible that a magneto will perform well at high speeds but be poor on lower. The tester is 5¼ by 4 inches and comes equipped with cables.



Full of Information

I DO not see how FARM MECHANICS can be improved any, for it has anything a man wants to find. It should be in every home, for it is sure full of useful information.—E. ANDERSON, Davenport, Nebr.

If anything was ever simply built it surely is the new, refined

Phelps

Power and Light

No Switchboard

to continually adjust. New Phelps Controller is guaranteed to automatically start, run and stop the Phelps for the entire life of the plant.

No Carburetor

to daily tinker with. Phelps Vaporator burns all kinds of fuel economically.

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eliminate all battery worries; protected to you by our 5 year replacement guarantee.

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to drive individual motors in house, out-buildings and at the well.

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to pull a line shaft loaded with a dozen chores.

75 Lamp Capacity

from the generator without the aid of the batteries.

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Pumps water, grinds feed, milks cows, churns, separates, washes, irons, sweeps—does every chore on your farm quicker, better, cheaper than you now do by hand.

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Costs no more than plants that do less than half the work and give less than half the light.

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We help you find prospects and close sales. Phelps dealers are successful. Send coupon below for dealer franchise facts TODAY.

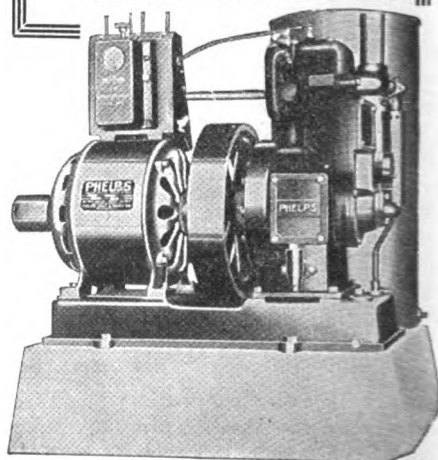
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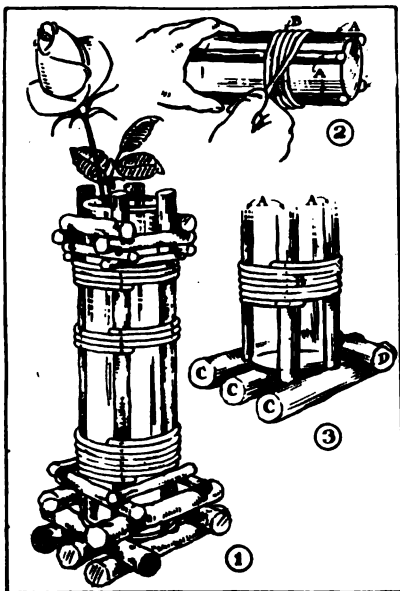
WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

Something for the Girls to Make

Rustic Vases and Baskets

WHEN you have finished a set of these rustic pieces, you will have something pretty and unusual that will be admired by all of your friends. You will find working with rustic material a delightful handicraft, besides.

Dried branches will not do for basket making. You must go out and cut your material shortly before you are ready to use it. Select only straight branches, of new wood. Tender shoots sprouted from tree roots, branches from some varieties of shrubs, and vines furnish good working material. You will need a sharp knife for cutting the pieces to correct



Rustic Vases and How to Make Them.

lengths, and $\frac{3}{8}$ -inch brads and glue for fastening them together.

The flower vase in Fig. 1 is built around a long slender olive or pickle bottle. The first thing to do is to cut four $\frac{3}{8}$ -inch sticks a trifle longer than the bottle (A, Fig. 2), and bind them to the sides of the bottle with pieces of vine. The sticks should be spaced equidistantly, and there should be a wrapping at the center, and a wrapping several inches from each end. Fig. 1 suggests the number of turns to make at each point of wrapping. Fasten the vine to sticks A with brads, as shown.

Fig. 3 shows how to start the base by placing three short sticks side by side, standing the bottle upon them, tacking the lower ends of sticks A to them, and then crossing sticks C with a second tier of



The STANDARD GOVERNOR will cut repair costs, decrease fuel costs, prolong the life of the Ford Truck or Fordson Tractor, and pay for itself many times over by increased efficiency in field and road work.

The STANDARD GOVERNOR has many points of mechanical superiority. Because of its all 'round high quality, it cannot be sold for a price as low as the prices set on inferior makes. It does everything that a good governor is supposed to do and it performs those duties efficiently, economically and lastingly. It is very easily installed.



Send for the
Farmers Handbook
Free

The automotive dealer who is not selling his share of *Standard Governors* is passing up an opportunity in his territory. The *Standard Governor* is a fast selling device that gives the dealer a quick turnover and gives the truck or tractor owner lasting satisfaction. Write us today for prices and further information.

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BRANCHES:

San Francisco, 32 Van Ness Ave.

Detroit, 4610 Woodward Ave.
Boston, 15 Jersey St.

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Light doors, medium or heavy.

Frantz has designed each set of hardware for its particular need.

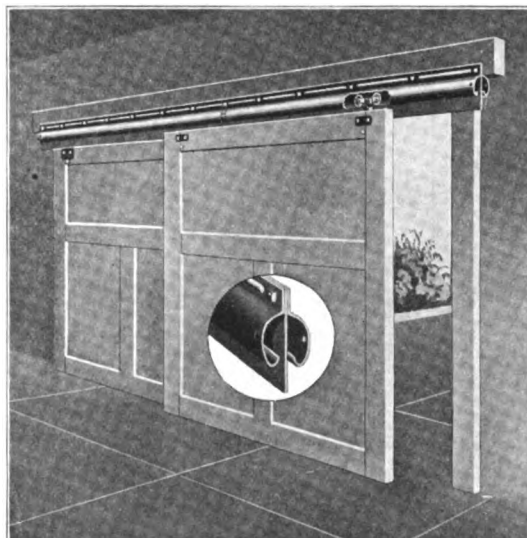


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purpose has made many friends for us. Our complete line includes small sets for private garage use or full equipment for public garages.

If you are building a garage, consult us — give us your specifications and we will gladly fit your needs with the correct hardware. Possibly you haven't decided on the style of garage you will build — write anyway — we have a book of garage designs that's yours for the asking.

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STERLING, ILLINOIS





SAVES countless STEPS
to CELLAR and SPRING HOUSE

Make Mother's work easier—lighten the burden of housework—save her a dozen trips every day to cellar or spring house—with the

WILLIS ICELESS REFRIGERATOR

Enables you to make use of Nature's system of cooling; gives you an ice box that needs no ice, no expense, no up-keep, no repairs. Puts the foods within easy reach of the kitchen table and keeps them sweet, clean, sanitary, pure and at exactly the right temperature, winter and summer.

A Genuine Guarantee

The Willis Iceless Refrigerator is guaranteed by dealer and maker to do all claimed for it; to be perfectly satisfactory or the purchase price will be instantly and cheerfully refunded.

SEE THIS MODERN REFRIGERATING SYSTEM

Write us today for our dealer's name in your territory.

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DRIVE YOUR FORDSON Like a Team

—and Save a Man

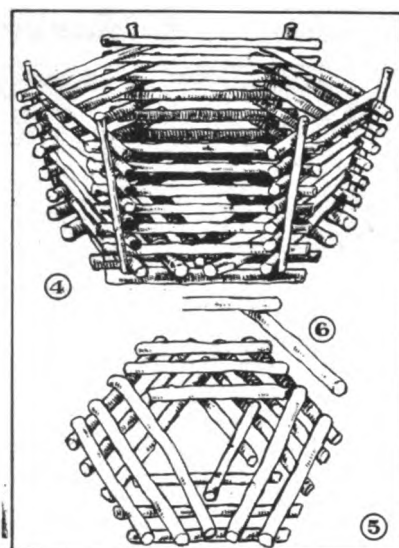
Write for Free Folder describing the wonderful new Rowe Line Drive for Fordson Tractors. Enables operator to control every move of tractor instantly and easily from seat of binder, mower, wagon or any other implement, exactly the same as when driving horses and to do it better.

Two Lines Do All

So easy a boy can drive tractor as well as a man. Learn in ten minutes. Simple handling of only two lines starts, stops, turns to right or left. Gives more gas or less gas, automatically shifts all gears including reverse, throws clutch at just right time—every time. Can't possibly strip gears. Easily and quickly attached. No holes to bore—not even necessary to take off seat or steering wheel. Does not interfere with riding tractor seat if desired—just unsnap the lines. Pays for itself in a few days. Every user a "booster." Satisfaction guaranteed or money refunded.

Made by the makers of famous Can't-Sag Gates. Write for Free Folder today.

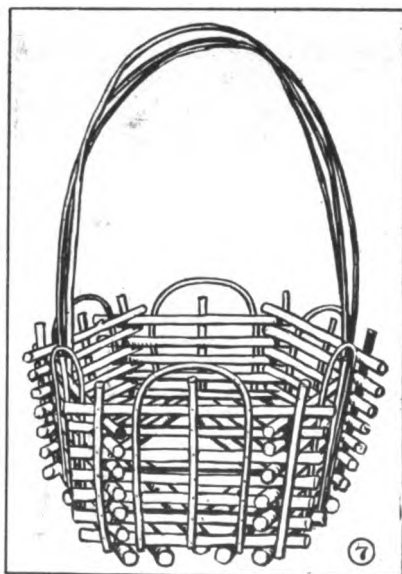
ROWE MANUFACTURING CO.
307 Liberty Street Galesburg, Illinois



Rustic Baskets.

sticks (D) log-cabin fashion. Lay up several tiers of stick logs as shown in Fig. 1, nailing each stick to the sticks it crosses. Near the top of the bottle, directly above the upper vine wrapping, cross and fasten three or four pairs of sticks in like manner, and the vase will be completed.

The six-sided basket shown in Fig. 4 should be built of sticks approximating $\frac{3}{8}$ -inch in diameter. Figs. 5 and 6 show the construction of the bottom, which is the first part to make. Notice that the form of the bottom is developed with the first tier of sticks, and that the second tier cross the first. When the upper sticks have been nailed to the lower sticks, a strong bottom will have been formed. Lay up the sides of the basket log-cabin fashion, crossing alternate sticks as shown in Fig. 4. When you have built them as high as you want, cut six sticks to fit in the corners, nail them to the side sticks,



Rustic Basket with Loop Handle.

\$

MAKE MONEY

You must make a profit in Dollars and Cents to succeed in the threshing business.

The purchase of profitable machinery is the most important step the successful farmer or thresherman takes.

Red River Special

machinery is PROFITABLE to own or hire.

Economy and ease of operation—the superior quality of its material and workmanship—its long life—and its ability to get the best jobs because it does the best work are what makes RED RIVER SPECIAL machinery profitable.

It Saves the Farmer's Thresh Bill

Its good work makes a profit for both thresherman and farmer.

Roller bearings on cylinder and wind stacker shafts save on power—an added profit for you.

Hire or own a Red River Special.

It Will Make Money For You

Write for Free Circulars

Nichols & Shepard Co.
(In Continuous Business Since 1848)
Builders exclusively of Red River Special Threshers, Wind Stackers, Feeders, Steam and Oil-Gas Traction Engines.

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O.K. Champion
HAMMOND, INDIANA
Tillers
Built for Both Tractors and Horses

EVEREADY AUTOMATIC WINDSHIELD CLEANER
Clear Vision — Avoid Collision
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UNIVERSAL BATTERIES
for all kinds of work—parts for all kinds of Batteries. Universal Sealed Glass Cell Batteries are giving satisfaction on thousands of Farm Light and Power Plants.
National Radio Exposition, Chicago, June 26 to July 1. See our exhibit at Booth No. 37.
Universal Battery Company, 3423 S. LaSalle St., Chicago, Ill.

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

and nail their lower ends to the bottom sticks.

The handled basket illustrated in Fig. 7 is built in the same manner as the basket in Fig. 4, but added to. The looped handle may be made of a piece of grape-vine. The loops on the sides may be made of any easily bent sticks. Run the handle ends to the bottom, and nail them securely to the sides.

(Copyright, 1922, by A. Neely Hall)



Broody Hens Are Here Again

THERE are two kinds of hens on every farm this time of the year, broody and laying hens. Each costs 18 to 20 cents a month to feed. The broody hen lays no eggs and therefore cuts down the flock's production, the laying hen will average 18 eggs per bird a month and is a good financial proposition, even during low prices.

A good system to follow in breaking up broody hens, advises W. H. Allen, extension specialist in poultry husbandry of the New Jersey State Agricultural College, is to visit the hen house each night and put in the broody coop all hens found on the nests. Confine these birds to the broody coop for 72 hours and feed them nothing except laying mash, green feed and plenty of water. For best results the broody coop should be roomy and located in a cool place.



An Inspiration

THE Henry Ford number of FARM MECHANICS alone was worth the price. The other farm numbers were fine. The farm building plans to me are interesting. In fact, I read it all from cover to cover. Barn plans and articles about how noted farms are managed with pictures help us to aim higher ourselves.—J. R. HOPKINS, Henrietta, N. Y.



First-Class Magazine

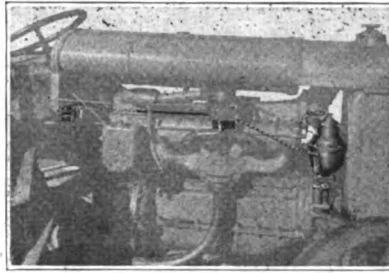
I CONSIDER FARM MECHANICS a first-class paper and class it among the most important of all the many farm papers which I receive. It is well worth the money.—NEIL McSHANE, Humansville, Nev.



Likes Farm Mechanics

KEEP on giving articles on tractors, gasoline engines and automobiles. Also practical handy devices for the farm home, buildings and farm, and farm implements. I think a great deal of FARM MECHANICS.—G. R. DAVIS, New Comerstown, Ohio.

Control Fordson Speed



with TACO FLY BALL GOVERNOR

The Taco is the *leading* Governor for the Fordson. More than 40,000 in use today. Daily the number grows—and nothing proves merit like success! Put the TACO on your Fordson. It automatically controls the speed in a rapid, precise manner. You regulate the speed right from tractor seat without choking down motor power. You make your Fordson more obedient. Save time and money. A big reduction in price has just been put into effect.

FARMERS! Reduced Prices on TACO Governors

Get in touch with our dealers or write us direct for new prices.

THE TACO-MEYERS MOWER

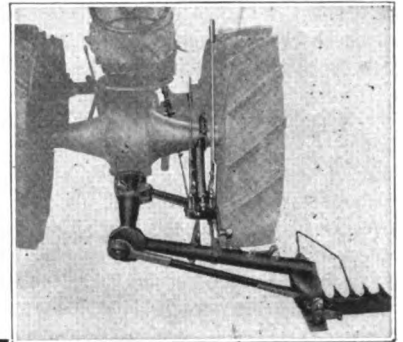
A Proven Mower for the Fordson

Attaches to the business end of the tractor—the part designed to carry loads. A sickle bar located to permit cutting a square corner. Has more clearance than the tractor. Equipped with a safety device that stops the tractor when an obstacle is encountered. Attached by simply tightening four nuts and a clamp.

Take advantage of this opportunity offered you. This wonderful mower at a greatly reduced price.

Write today for full particulars

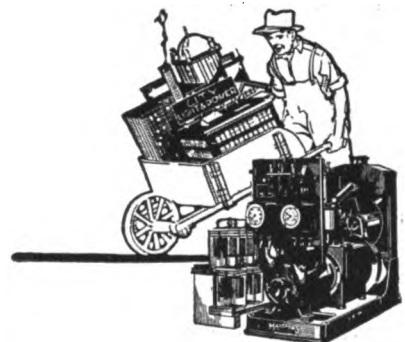
The Tractor Appliance Co.
211 Monroe St. New Holstein, Wis.



Install a MATTHEWS Full Automatic Plant on Your Farm

and you will have city light and power

In the city you press a button and get light or power instantly. With the MATTHEWS you can have the same dependable electrical service right on the farm. You don't need to start the plant—it starts itself. You don't need to stop it—it stops itself. Press a button anywhere and you get light or power instantly. You don't have to worry about your battery running down or being overcharged—for the MATTHEWS automatically keeps the battery properly charged at all times.



\$295 WAS \$395

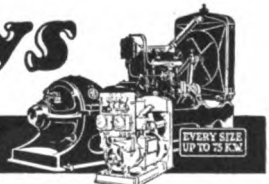
No matter what size you need, we have it—from 15 lights all the way up to 75 kilowatts. Prices, \$295 and up. If you need an electric light plant, you need a MATTHEWS.

Write for information today.

MATTHEWS ENGINEERING COMPANY
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Matthews
Full Automatic

ELECTRIC LIGHT AND POWER





Our Readers Are Requested to Make Free Use of this Department for Questions and Answers on Modern Farming and Farm Improvements

How to Swage a Saw

Editor FARM MECHANICS:

I saw a little lumber for myself and have trouble swaging the teeth of the saw. The center of the swage always breaks out. Will you kindly tell me the correct way to do this?—Walter F. Peterson, Pulaski, Wis.

Answer—Breaking of the teeth on a circular saw at the center may be the result of trying to swage the saw with a damaged swage, or it may be the result of seams or splits in the steel, or possibly the steel is too high in temper or not sufficiently tough to stand the swaging operation. Your letter does not indicate whether you are using a lever or upset swage.

If you are using an upset swage you can readily determine by looking into the swaging slot whether the swage is damaged sufficiently to cause a break in the tooth at the center. If you are using a lever swage, some times the break at the center comes about from too severe action of the eccentric die. That can be easily regulated by having the die take hold further down on the tooth and let its action on the steel be more gradual, or, it is barely possible that there is too much eccentric and the speed of spreading the steel should be slowed down by using less eccentric than you have. The most prolific cause of breakage under the swage is what we call a split or seam in the steel. If the saw has a split or seam in the steel it is an inherent defect in the material, some times not traceable to the fault of the saw manufacturer, as these splits and seams sometimes develop in a way that the most careful inspection by the saw manufacturer would not find them.

You can tell whether the seam is in the steel or not by filing square across the back of your tooth and then look for a hair line that will show at the bottom of the point where the break occurs in your swaging operation. There will be a slight difference in the color of the steel on this hair line that will show you where the split will extend as you continue to swage the saw. A light

tap with a cold chisel in the seam will open it out, laying apart the two layers of steel from which the saw is made.—The Editor. ✦

Champion Agricultural Judges of New Jersey

Editor FARM MECHANICS:

Here are the judges that won the New Jersey State Championship Trophy Cups in a recent state-wide agricultural judging contest held at Trenton, New Jersey.

From left to right those in the pic-



New Jersey Agricultural College Championship Judging Team.

ture are: Fred G. Lodge, teacher of vocational agriculture; Edward Britton, Paul Wright, Charles Marsh, Douglas Harrison, and Edward Phillips. These boys received trophy cups for winning first places in potato judging and swine judging contests. The large grand-champion cup was also awarded them because they made the highest record in the entire contest.

These boys are ardent readers of THE FARM MECHANICS as a part of their agricultural training, and will soon be real farmers and community leaders.—F. G. Lodge.

✦

Sky Light in Work Shop

Editor FARM MECHANICS:

AN ingenious neighbor needed more light in his work shop on the farm. Having some extra hot bed sash he decided that a sky light would help him out.

It was easy to put in and there are lots of unused sash around the country that can be bought. Maybe this could



Skylight Built Into the Farm Workshop.

be applied to your shop as well.

One usually does a lot of farm tinkering and repairing on rainy days which are more or less dark. This eliminates this trouble and makes repairing easy and pleasant.—Earl Rogers, Pemberville, O.

✦

Getting Better

IAM more than pleased with your most interesting farm paper. I think FARM MECHANICS is getting better with each issue. My wife says: "Why not more poultry news and another page or so especially for the farmer's wife, added conveniences and household short cuts." I am especially interested in the tractor news, and hope it continues as interesting as in the past. Yours for success.—RALPH L. HAYS, Bloomingburg, Ohio.

✦

Whole Family Like It

ICERTAINLY appreciate the good things I get in FARM MECHANICS, and so far as suggesting anything that would improve it, I feel that my effort would be a poor one, as we have the privilege of asking for things that we do not get in the magazine. It just about makes it complete. Allow me to say that the magazine has been very inspiring to me, and also the whole family. We hail its coming.—L. C. OLDHAM, Jr., Montague, Texas.



Books for the Farm Library

PRODUCTIVE SWINE HUSBANDRY, by George E. Day, professor of Animal Husbandry, Ontario Agricultural College, is another of the Lippincott Farm Manuals. This is a 364-page cloth bound book that is divided into six parts—Introduction, dealing with the place of the hog on the farm and types of swine; Principles of Swine Breeding; Breeds of Swine; Results of Experiments in Swine Feeding; Feeding and Management; Marketing and Curing and Buildings; Sanitation and Diseases. At the end of each chapter there are review questions which make this volume of use to students. Published by J. B. Lippincott Co., Philadelphia.



COMMON DISEASES OF FARM ANIMALS, by R. A. Craig, D.V.M., professor of Veterinary Science, Purdue University, is one of the Lippincott Series of Farm Manuals. This is a 334-page, cloth bound book that deals fully with the common diseases of the different animals maintained on the farm, and gives instructions in the care and treatment of the animals. There are 123 illustrations which aid the text and make it comparatively simple for farmers to discover and determine the various diseases. Published by J. B. Lippincott Co., Philadelphia.

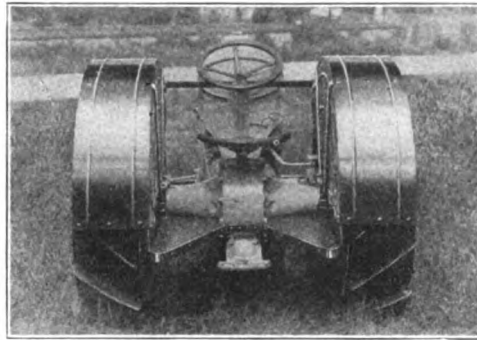


PRODUCTIVE POULTRY HUSBANDRY, by Harry R. Lewis, formerly poultry husbandman at the New Jersey Agricultural Experiment Station and now with the Rhode Island Agricultural College, is a third of the Lippincott Farm Manuals. This is a very complete work on poultry husbandry, is well-illustrated and is especially useful to students of agricultural schools, as it also contains review questions at the end of each chapter. The book contains 560 pages and 370 illustrations. Published by J. B. Lippincott Co., Philadelphia.



LICE and other parasites, lack of exercise and lax feeding lead to losses in swine production.

Dependability

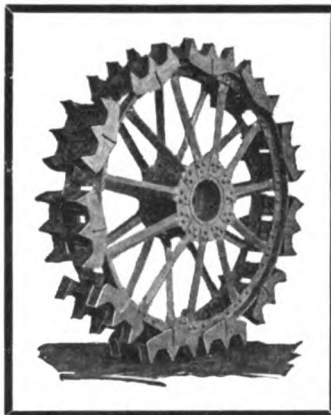


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allow the tractor to pass over boggy ground that would be impassable without them because they form a track on which to run.

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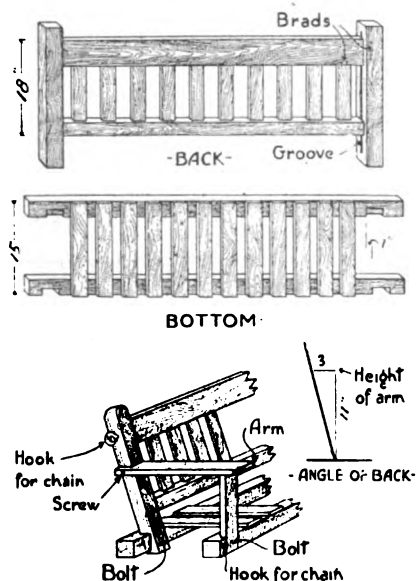
MECHANICS in the HOME



Porch Swing

LAST winter a reader of FARM MECHANICS asked thru your columns for plans for building a porch swing. Not having seen any published, I am sending herewith plans for a swing which can be made some rainy day and be ready to enjoy on those warm evenings.

The best and easiest material of which



Drawings Showing Details of Construction of Porch Swing.

to construct a porch swing is an old high back wooden bedstead. Most people have one of these discarded beds about or one can usually be purchased for much less than the value of the lumber in it. It is well to let it sit out in the weather awhile to loosen the glue and varnish. The boards can then be easily separated and the varnish scraped off. The frame of the swing is made from the corner pieces. The two crosspieces of the back are made from the heavier boards with the grooved edges towards each other. These boards have a tongue on each end which fits in the groove in the corner pieces. The slats in the back and for the bottom or seat are made from the thin boards ripped into narrow widths. These fit in the grooves of the two crosspieces of the back, being secured in place with small brads. Cut the notches in the bo-

tom pieces to make a tight fit to prevent sideplay.—Frank L. Thompson, Jeffersonville, Ohio.



Oiling and Cleaning Help Sewing Machine

KEEP your sewing machine more than dusted; keep it clean if you would have it do good work. A small brush cleans away the lint, and the plate under the presser foot should be removed frequently for cleaning, since lint is especially liable to collect at this point.

Use only good sewing machine oil. Ordinary machine oil contains many impurities and is too heavy for the mechanism of the sewing machine. Every point where there is friction needs oil, and once a week is not too often for a drop in such places if the machine is used every day. Too much oil, on the other hand, is liable to gum the parts, and when this occurs the machine "runs hard." Kerosene or gasoline will remove hardened gum on the bearings.

Covering a machine when it is not being used will protect it from dust and is a precaution against injuries if the children are tempted to play at sewing.



Two Good Dishes

SCALLOPED ONIONS AND PEANUTS: Cut the onions in quarters; cook them uncovered in boiling salted water until they are tender. Drain them, and reserve the broth for soup. Grease a baking dish, and put into it a layer of onions. Sprinkle over this about 2 tablespoons of ground peanuts. Add another layer of onions and a layer of peanuts. Pour over the top a medium thick white sauce, well seasoned, using about 1 cup for each 2 cups of onions and peanuts. Cover the top with buttered crumbs, and brown it in the oven for 25 or 30 minutes.

CHEESE AND DANDELION ROLL: 1 quart dandelion or other greens, cooked and chopped, 1 cup grated cheese, 1 tablespoon butter, 2 tablespoons catsup, 1 tablespoon horse radish, 1 cup cooked hominy grits.

Combine the ingredients and form the mixture into a roll. Place it on a

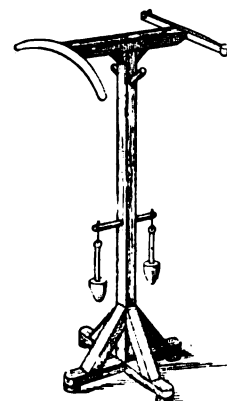
greased pan and bake it in a slow oven for 25 minutes. Remove it to a hot platter and garnish it with sliced hard-boiled eggs. Serve the roll with tomato sauce.



The Night Rack

THIS "Night Rack" makes an orderly attendant for day clothes at night. Each garment has its place

—all in one place. Clothing is held in shape, freshened and ventilated until put on in the morning. The rack includes coat (or dress) hanger, trouser (or skirt) press, extra hooks and shootrees. The rack keeps garments in a sanitary way and saves many steps which are



The Night Rack.

usually employed crossing a room to the closet and back again. It is an ideal addition to the guest as well as any other bedroom. The illustration will give the handy man with tools the idea of how to build this rack.—Marion Belden Cook.



Hanging Cut the Wash

OBSERVE the following principles when hanging out the weekly washing on the line to dry. Always hang articles so as to dry quickly, with the lease strain, with things of a kind together, with threads of the material straight, with hems, not selvages over the line, with articles wrong side out. In detail: Skirts should be hung by the bands; shirts and waists by the shoulders; aprons and drawers by the bands or a few inches over the line; chemises and night gowns with six inches or so of the hem over the line; closed end of the pillow case over the line; towels and napkins one-fourth over the line; sheets and table cloths doubled wrong side out, hems stretched,

placed 10 inches over the line and pinned at least four times to prevent sagging.



Proper Whitewash Sticks and Hangs

WHITewash whiter than some, that lasts well on outside jobs, and that spreads so well that a pint covers nearly a square yard is being recommended for spring application by the state college at Ithaca under the name of "Government whitewash." The standard recipe given is:

Slake one-half bushel of fresh lime with boiling water, covering the receptacle to keep in the steam. Strain the liquid thru a fine sieve, and add 7 pounds of fine salt, previously dissolved in warm water; 3 pounds of ground rice, boiled to a thin paste and stirred in; 1 pound of white glue, soaked first in cold water until swollen, then carefully melted over fire.

To this mixture add five gallons of hot water and let it stand covered for a few days before using.



WHEN you iron the curtains, try wetting the ironing sheet instead of the curtains.



UP-TO-THE-MINUTE housekeepers use brushes for almost every cleaning job. Kitchens, cleaning closets and bathrooms are well supplied with 'em.



FURNISHINGS for the sewing room need include only the essentials, but "A place for everything and everything in its place" is particularly desirable here.



DON'T use lemon if your scalp is dry. Pure white castile soap in hot soft water is excellent for washing the hair. The juice of a lemon in the last rinse water will help to correct oiliness.



PURE soap and water is the best cleanser for bathroom floor and woodwork, and a little kerosene will take most stains from porcelain. Harsh scouring powders take the gloss from painted or enameled surfaces and leave them streaked and worn.



THORO cleaning and grading of seed is the first step toward a successful crop.



ONE measuring cup for liquids and another for dry ingredients save time and materials for the cook.

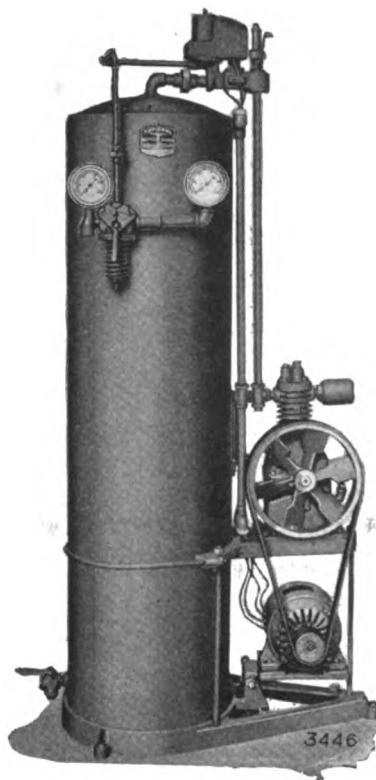


WHEN buying draperies experienced housewives hold them against the light. Curtains hung sometimes appear quite different from on the counter.

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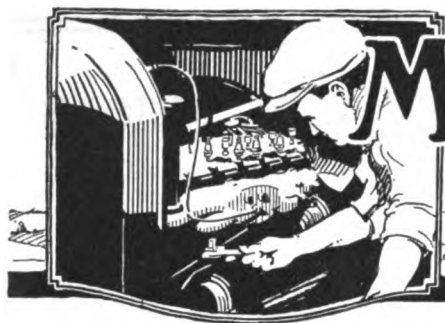
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WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS



Motor Trouble Advice

By F. M. Service



Oil for Oversize Pistons

To the Expert:

We have been using the lubricating oil recommended for our Fordson tractor purchased in spring of 1918.

This spring it became necessary to reground the cylinders on account of having a crack welded. The reground job was too large to use Fordson oversize pistons so the mechanic in charge got some light weight cast iron pistons and turned them down to fit the reground job. These pistons have the three rings all on one end instead of two on one end and one on the other as the regular Fordson piston. The mechanic above referred to says that the job will fit and run like a high-priced motor.

Now the question is, what grade of oil should we use?—J. M. ROSSMAN, Lakeview, Mich.

Answer—There is no reason why the job you have had done on your motor should not be as good as the mechanic states, providing it has been done properly. The location of the piston rings is simply a matter of opinion, and there are reliable manufacturers of tractors and automobiles that are using both methods of ring location.

The same grade of oil that you have been using, should still be used, tho the crankcase must be kept well filled and the tractor operated carefully for time until the new pistons and rings have had a chance to properly wear in.—F. M. SERVICE.



Ford Car Starts Fordson

To the Expert:

I am a Fordson tractor owner and have some experience that may help others.

My tractor has a weak magneto and is hard to start, especially when cold. Wanting to start it one day and not having a battery, I used the Ford car.

I had some insulated wire and connected one wire to magneto terminal on the battery box and grounded the other wire. I then started the car and connected the other ends of wire, one to magneto lead wire of tractor and grounded the other. I found this way

Mr. Service will answer free of charge for Farm Mechanics readers questions of general interest on Automotive troubles. As a "trouble shooter" he is probably the best equipped man in the industry, having diagnosed the ailments of thousands of automobiles, trucks and tractors. Put your troubles up to F. M. Service—Editor.

beats a battery every way, being much quicker. After the tractor is started, switch the magneto wire back to the magneto post and you are off. You must look out for kicking.—LEROY W. MEEHAN, Rockwell, Iowa.

Answer—This is a very good suggestion. I have often done it myself, starting both cars and tractors.—F. M. SERVICE.



Gasoline or Kerosene

To the Expert:

I have just recently purchased a Fordson tractor and I thought it would be better to use gasoline instead of coal oil in the large tank, but upon plowing with the tractor a while I noticed the large tank gets very hot. I would like to know if there is any danger of the gasoline exploding and if not why.

If gasoline is used instead of coal oil, is not carbonizing reduced to a minimum and doesn't the tractor have more power?—A. W. EMMERT, East St. Louis, Ill.

Answer—There is no danger of the gasoline exploding because the tank seems to heat up. This heating is simply due to the heat generated by the motor being conducted to all parts of the tractor. Even if the tank should heat to the point where the gasoline would change to vapor gas, there would be little danger as there is a small vent in the gasoline cap which would carry these fumes away as fast as they formed.

We would recommend that you use kerosene, however, instead of gasoline, as kerosene has much more power and the tractor is designed to develop its maximum efficiency with this kind of fuel.—F. M. SERVICE.

Fordson Questions

To the Expert:

Please answer the following questions for me:

What voltage is a Fordson tractor magneto? What voltage and ampere bulb can be used in a lamp on a Fordson tractor to give satisfactory service?

Is there any way in which the clutch on a Fordson can be tightened after it begins to slip from wear or will I have to install a new clutch or will new plates be all that is necessary? Please give directions for tightening clutch and if this is not possible directions for installing new one.

Is there such a thing as motor oil getting into the transmission on a Fordson? My tractor uses about three gallons of motor oil a day. The pistons and rings are in good shape. The motor fires regularly and the plugs are always dry and hard. Therefore I am convinced the oil is not burned.

On the other hand the transmission is always full and very thin for transmission use. I can draw out a gallon and in a few days the same thing may be repeated. How may this be remedied?—J. T. WALKER, Norlina, N. C.

Answer—The voltage of the magneto will vary from 18 to 24 volts at a speed of 800 to 2,000 R. P. M., and you should use an 18-24 volt, 36-candlepower bulb in your lamp or you could connect up two 9-volt, 24-candlepower bulbs in series.

The only way to tighten your clutch, if it is slipping is to replace the worn plates, or replace the clutch springs which may have lost their tension. A temporary repair can be made by installing an extra washer behind each clutch spring, tho this may cause some trouble with the gears clashing when being shifted, as the clutch might not throw out entirely. The method of installing the new clutch plates can be found under the article on "Overhauling the Fordson," which appeared in the March and April issues of FARM MECHANICS.

It is very possible that your motor oil is getting into your transmission. This may be due to a cracked transmission plate or a leaky bolt or gasket, and

when you are repairing your clutch it is not much more work to take out the transmission plate and correct the trouble.—F. M. SERVICE.



Not Magneto Trouble

To the Expert:

I am a reader of FARM MECHANICS and wish to get some information concerning an Aultman-Taylor tractor. Last summer the old magneto was taken out and a new one installed, but before and after it has bothered in this way. Upon starting up in any kind of weather it spits and pops and will not take a load. The engine will begin missing and finally die down altogether, but as soon as you turn it onto the battery it will work fine. It bothers this way until the heat is brought up to 50 or 60 degrees. Then it will work on magneto fine.

I tried changing the points just about one-quarter turn on the new magneto, and it worked fine for a month or so. Then it began to bother again. Have tried filling them and changing them some but can get no lasting results.

Can you give me any help on this subject? I wish to start it up soon and would like to locate the trouble first.—C. E. ROGERS, Windom, Minn.

Answer—It would not appear that your trouble is in the magneto at all, but more likely is due to a lean mixture or poor compression. We would suggest that you try adjusting the carburetor for a richer mixture, and if this does not help grind and reseat the valves. The fact that it appears to run on the battery all right when cold is because the battery will furnish a much hotter spark at low speeds than the magneto and will successfully fire a lean charge of gas that the magneto could not.

If you do not care to touch the carburetor or valves, some relief may be had by setting the points on the spark plugs closer than they are. This will permit the spark from the magneto to jump the shorter gap of the plugs with a much lower tension.—F. M. SERVICE.



Removing Bushings

To the Expert:

Will you please tell me how the bushings are removed and new ones replaced in Ford pistons?—HENRY HESTERBERG, Girard, Ill.

Answer—The bushings in the Ford pistons are best removed with an arbor press, but if one is not obtainable they can be driven out with a large punch.

In replacing them be careful to not

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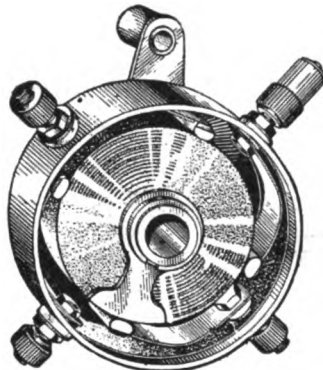
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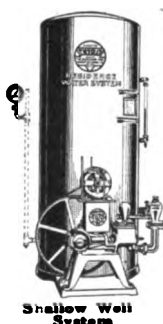
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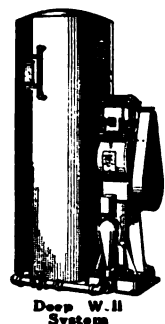
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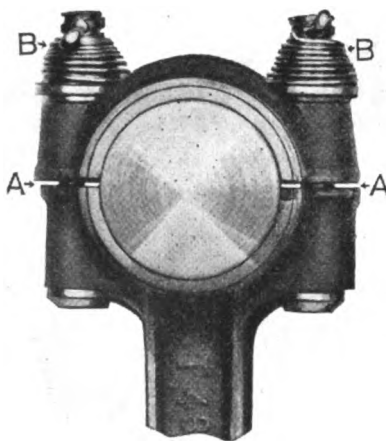


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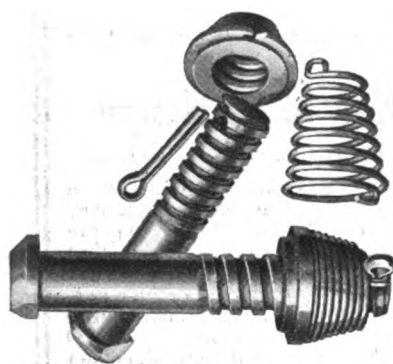
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batter up the edges, and after they are in it is necessary to ream them to the correct size so that the wrist pins will be a snug fit.—F. M. SERVICE.



Operates a Samson

To the Expert:

I would like to have these questions answered:

What spark plug should be used with the Samson tractor? I have been using 7/8 regular, but in an advertisement I saw that the extension should be used. What is right? What is the right kind of oil to be used in the transmission of the Samson?

Sometimes the governor does not work right. It speeds up the tractor, and slows down again, and keeps this up in that way. I have had new balls, a new guide, and also the disc and cap put on. The carburetor has been cleaned and the spring seems to be strong enough. Does this more when running idle, than when working. What is wrong?—ALBERT SCHELLHASE, York-shire, Ohio.

Answer—Probably the 7/8 spark plug with the extension on the tube would give the best results, as it brings the points further into the mixture in the cylinders and should cause better firing conditions. Any good make of spark plug will give good results.

Regular transmission oil should be used in your gear box, but be sure that you buy the best grade obtainable.

Too rich a mixture may be causing your governor to act in the way you describe. This would cause the engine to gallop and would effect the governor. If you are sure that the mechanism is right, look for the trouble in an uneven running engine.—F. M. SERVICE.



Grease in Transmission

To the Expert:

We are having some trouble in stopping grease from running from transmission into crank case.

We have put in new grease rings, but they do not seem to stop it.

This is a 1918 Fordson.—GERALDINE MOTOR Co., Geraldine, Mont.

Answer—We would suggest that you replace the plate between the transmission and the crank case with the new style one, which is constructed with a ridge cast in it which prevents the grease from getting thru.

The earlier model tractors experienced quite a bit of this trouble, and the plate used on the newer type was constructed to overcome this, and is interchangeable on all Fordsons.—F. M. SERVICE.

Lights from Battery

To the Expert:

I wish to change my lighting system from the Ford magneto to dry cell battery light. Some say it cannot be done unless I use a storage battery.

As I only want it for lighting purposes, please tell me how many dry cells I will have to use as my light has 6-8 bulbs.—C. B. JOHNS, Bethany, Mo.

Answer—You can operate your lighting system with dry cells, but it would be a very expensive way of running them. It would take three dry cells to operate each bulb using 6-8 volts, and the dry batteries would last only a very few hours before they would be completely worn out.

By using a storage battery of 6 volts capacity, you would be able to light all your lights from 20 to 40 hours on each charge. The expense of recharging again would be under the cost of one set of dry cells.—F. M. SERVICE.



Advantages of Cutout

To the Expert:

Please advise me as to the advantages and disadvantages of a cutout on an Overland, 4-cylinder 1920 model.—ARTHUR NEWTON, Fresno, Calif.

Answer—There is no great advantage in having a cutout on your car, except that under a hard pull on a hill, etc., the motor will operate a little easier with the cutout open. This relieves the cylinders of any back pressure due to the exhaust gases being forced thru the muffler to muffle them. It allows the motor to draw in a better mixture from the carburetor on each intake stroke, as they are more free from the burnt gas.—F. M. SERVICE.



Can't Use Magneto for a Spotlight

To the Expert:

I would like to know if there is any way of connecting a spotlight to a high tension magneto on a truck or tractor. If so, how would it be connected and what voltage bulb would be needed?—WALTER J. VANDEMARK, Everly, Iowa.

Answer—There is no way in which you can connect up a spotlight to a high tension magneto as the voltage in the magneto is stepped up to between 8,000 and 20,000 volts. It is so changed by this transformation that it cannot be used to light bulbs of any kind.—F. M. SERVICE.

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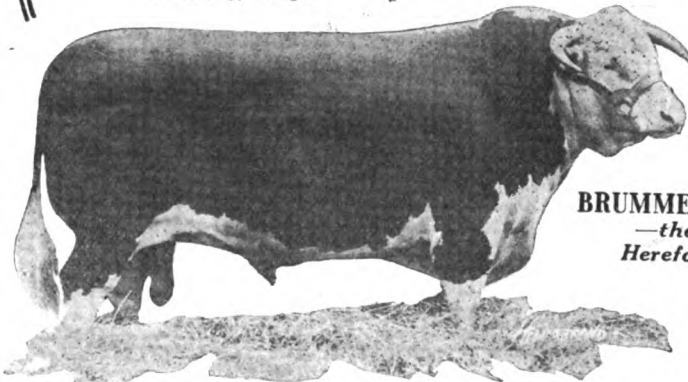
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Fenestra
STEEL WINDOW WALLS

"They cost less to buy and install than wood windows"

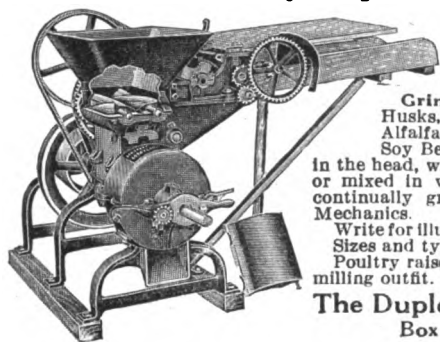
Detroit Steel Products Co.
2354 E. Grand Blvd.
Detroit



COMBINATION CUTTER AND GRINDING MILL

The Ideal Utility Mill

The Kelly Duplex Leads Them All



The best made, most complete, most useful, most economical to operate, easiest running, most durable, and altogether the most satisfactory mill to be had. A winner at the great fairs in trial tests.

Grinds Ear Corn and Cob, with or without Husks, all kinds of Grain, separately or mixed, Alfalfa, Corn Fodder, Sheep Oats, Pea Vine Hay, Soy Beans with vines, Kaffir Corn and Milo Maize in the head, with a portion or all of the stalk, either alone or mixed in varied proportions. The use of this mill continually gratifies several hundred readers of Farm Mechanics.

Write for illustrated booklet. Mention Farm Mechanics Sizes and types to suit any power. Poultry raisers ask for special circular on poultry feed milling outfit.

The Duplex Mill & Manufacturing Co.
Box 445, SPRINGFIELD, OHIO

SOMETHING THE BOYS CAN MAKE

How to Build a Teeter Board

APPLIED science long ago devised the contrivance illustrated, and christened it the Teeter Board. Probably no other invention since the dawn of history has accomplished so much toward the maintenance of peace among urchins. Slow, rhythmic chirrup of "Teacher taught 'er! Milk and water!" replace objurgations threatening battle, murder and sudden death. There are no turns to quarrel about. There are no temptations prompting Billy Boy to thwart the ambitions of Little Brother, or Little Brother to bring to naught the inspired enterprises of Billy Boy. Where discord reigned of yore co-operation becomes literally the whole thing, and lo, all is for the best in the least turbulent of all possible backyards.



Such Fun!

No doubt you will be inclined to suspect that perhaps the experts had your own backyard in mind when they devoted their attention to designing the ideal teeter board. One that works. One that is safe. One that lasts. One that suits not only backyards but public playgrounds as well.

To produce this work of genius, you think first of the foundations. After digging two holes, 3 feet deep and about 10 inches square and 18 inches apart from center to center, you make ready a preparation of cement, for which the recipe runs thus: Take a shovelful of portland cement, two shovelfuls of sand, and four shovelfuls of gravel, and mix with water.

You pour a little of the mixture into the holes. Then in each hole you plant a wooden upright 5 inches square and 5 feet 6 inches tall with 2-inch holes bored thru it, 4 inches from the top. A lot depends on the care with which you put the wooden uprights in place. They must be exactly plumb, and the 2-inch holes bored thru them near the top must exactly face each other, as thru those 2-inch holes a galvanized pipe is to go. More specifically a pipe 2 feet, 2 inches long and 2 inches thick, with a hole bored near each end. Again to be specific, a hole $\frac{1}{4}$ of an inch across

THE AUTO-OILED AERMOTOR

A Real Self-Oiling Windmill

Oil an Aermotor once a year and it is always oiled. Every moving part is completely and fully oiled. A constant stream of oil flows on every bearing. The shafts run in oil. The double gears run in oil in a tightly enclosed gear case. Friction and wear are practically eliminated.

Any windmill which does not have the gears running in oil is only half oiled. A modern windmill, like a modern automobile, must have its gears enclosed and run in oil. Dry gears, exposed to dust, wear rapidly. Dry bearings and dry gears cause friction and loss of power. The Aermotor pumps in the lightest breeze because it is correctly designed and well oiled. To get everlasting windmill satisfaction, buy the Aermotor.

Write today for Circular.

AERMOTOR CO. Chicago Kansas City Des Moines Minneapolis Oakland



—as the days grow longer

you may have a few free hours that easily could be turned into extra dollars. By interesting your friends and neighbors in FARM MECHANICS you can earn a tidy sum each month. No premiums or prizes, but actual cash profits for you. Our plan is liberal—and you know Farm Mechanics! For further information address P. N. R., 1827 Prairie Ave., Chicago, Ill.

"BEST" POTATO DIGGER

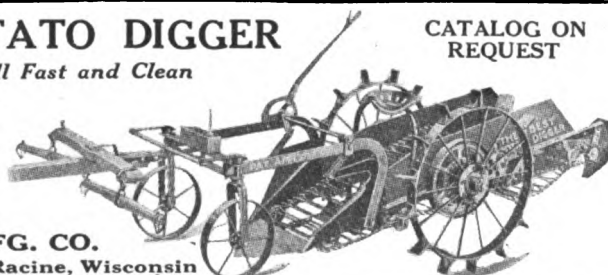
Gets Them All Fast and Clean

Durability built into the Best machine assures its owner of many seasons use. Strength combined with lightness make it possible for two horses to pull it easily.

Shovel 22 $\frac{1}{4}$ in. wide can be raised or lowered from operator's seat. Special attachment for stony ground.

THE WABERS MFG. CO.

1720 Racine Street Racine, Wisconsin



CATALOG ON REQUEST

Ask For This FREE BOOK Gives useful information and tables describes all kinds of saws for wood and metal cutting Send your address to E. C. ATKINS & CO., Inc. Dept. T Indianapolis



Be First to Get a PURE BRED DAIRY BULL on credit. Ayrshires are the best milk and butter cattle. Our Easy Payment Plan requires no cash down and gives you a year to pay for an Ayrshire bull from our wonderful heavy milk and butter producing herd. Write today to Box 125-R, Martinsville, Ind., for our unequalled offer. **GOSSARD BREEDING ESTATES**

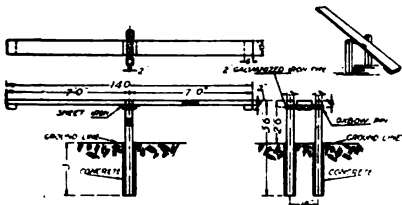


and bored where it will leave a spare inch of pipe beyond it. You pass an ox-bow pin thru each of these holes in the pipe to keep it firmly in place.

Now, when you have poured in the cement to make a solid mass around the foot of each upright, you may pause for rest and contemplation.

Your next problem is the teeter board itself. According to instructions, the board must be 14 feet long, 10 inches wide, and 2 inches thick. On its under side and at each end, you nail a shock-absorber, remembering that the regulation shock-absorber is a piece of wood 6 inches wide and of the same thickness as the board, and having a length equal to the board's width. Then no cruel bumps will afflict Billy Boy and Little Brother.

It remains to provide a pair of cross-pieces for the under side of the board



TEETER BOARD

Details of the Teeter Board, showing How to Build It.

near its middle. You cut strips of wood 10 inches long and 2 inches square and nail them on, each placed $1\frac{1}{4}$ inches from the exact middle of the board.

When the concrete has hardened completely, you put the board into position on the galvanized pipe. Beautiful! A faultless fit! The cross-pieces, with a gap of $2\frac{1}{2}$ inches between them let the pipe thru to a nicety.

But have you finished, quite? Yes, if the board is to be taken indoors at night-fall. Otherwise, you provide yourself with a piece of sheet iron 18 inches long, 10 inches wide and $\frac{1}{8}$ of an inch thick, and screw it into the under side of board across the pipe and cross-pieces. That will effectually prevent slipping, no matter how violent the enthusiasm of Billy Boy, or Little Brother, and of the "candlestick"—namely, yourself.—Community Service.



Started Right

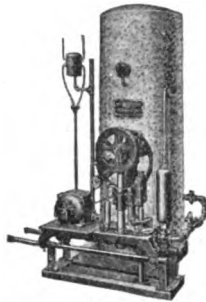
I RECEIVED the first copy of FARM MECHANICS published and every one since, and I have always been more than pleased with it.—C. L. BAUR, McKittrick, Mo.



Very Valuable

FARM MECHANICS cannot be more valuable to me than it is.—C. LINDSTROM, Westbrook, Minn.

A Paul Water System gives you city water service in your farm home, barns and buildings!



This Paul System will deliver 100 gallons to 2000 gallons per hour under 40 lbs. pressure, depending on well conditions, sufficient to supply kitchen, bathroom, laundry, stock and general requirements for medium sized dairy or stock farm. Othersystems of larger and smaller capacity. Write to our engineering department for free advice and recommendations.

HAVE water under pressure when you turn a faucet in kitchen, bathroom, laundry and milk-house, barns and buildings. Make your farm work easier and pleasant.

There is a Paul Water System to meet your farm needs, operating by electric power, farm light power or gasoline engine, and pumping from any well or spring.

Paul Systems are simple in operation, self-priming, self-adjusting and self-oiling, need no attention and are practically noiseless in operation. Prices as low as \$125, according to capacity and water lift necessary.

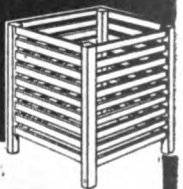
Write for booklet describing Paul Water Systems for large and small farm homes



Ft. Wayne Engineering & Mfg. Co., 1703 N. Harrison St., Ft. Wayne, Ind.

WATER PAUL SYSTEMS
REGISTERED TRADE MARK

Build Your Own Grain Crib With a Parks Woodworker



BUILD your own granary and store your grain until the first heavy shipments have gone. Then prices are almost always higher than at harvest and threshing time.

You can erect a granary 18 ft. long, 12 ft. wide and 10 ft. high with a capacity of 880 bushels at a comparatively small cost per bushel of oats or of corn. Ask your lumber dealer or contractor.

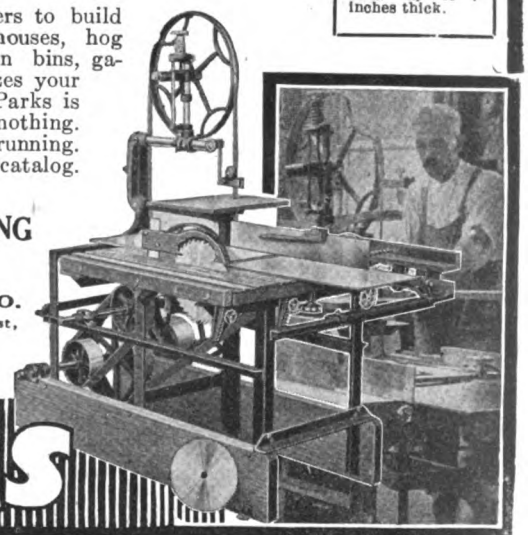
A Parks Woodworker enables farmers to build many things in winter—poultry houses, hog troughs, stalls, shelter sheds, grain bins, garages, barn additions. It capitalizes your spare time. The first cost of a Parks is small and its operating cost next to nothing. Strong, rigid, portable, smooth running. Guaranteed for ten years. Write for catalog. Price \$225.00.

THE PARKS BALL BEARING MACHINE COMPANY

4127 Langland St., Cincinnati, O.
Canadian Factory: 200-210 Notre Dame East, Montreal

Write for new catalog B

PARKS



B—Below, the Parks Four In-One, combining Circular Rip and Cross-Cut Saw, 12 In. Jointer and Boring Machine. Band-saws material up to 7 inches thick.



HANDY ANDY'S DEPARTMENT

WHERE FARM MECHANICS READERS CAN PASS ALONG GOOD, TESTED IDEAS.



Engine Pump Stop

I HAVE a handy device that you may put in your good paper if you think anyone else can use it. I studied it out and built it in my barn and it does very good work without any attention whatsoever. I am a smith by trade and made all parts myself and think anyone with a few tools can do the same. We have a milker and we milk, pump water and separate milk in one operation with the same engine. We find this pumping device very handy and don't have to bother about the water nor even think about it. The device does all the throwing out and in gear when the water gets low or high in the storage tank. This can also be used on tanks in barn lots. When the water gets low in the storage tank it throws No. 2 sleeve over onto No. 1 pin and pumps water 36 feet away and forces water up into tank in barn loft. When the water gets so high it throws No. 2 sleeve over further on to No. 3 and disengages the notch

\$1 for an Idea

I, Handy Andy, am famous, because I am found on nearly every farm. When some little thing that would make farm work easier pops into my head I get to work and build it. Farm Mechanics has asked me to pass my ideas along, so as to help everyone do things more easily. I want to pass your ideas along, too. Send them to me, using not more than 200 words, and a pencil sketch or photograph to illustrate it. I will send you \$1 for every idea accepted. Address your letter to me.

HANDY ANDY,
Care Farm Mechanics,
1827 Prairie Ave., Chicago.

and pin which stops the line shaft running to pump. The "I" bolt with spring No. 5, which fastens to end of No. 4,

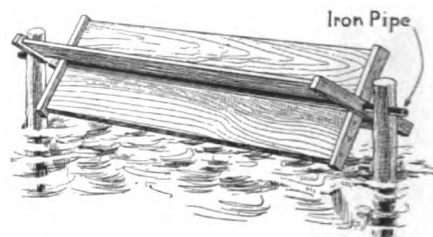
helps to throw it out of gear or in when the float in tank lowers or rises and saves the pin and notches from striking when engaging and holds it in gear until the pressure gets so heavy. Then it throws the lever over and reverses when engaging.

The sleeve No. 2 must run on No. 1 and on No. 3 at all times, but have enough room to slide $\frac{3}{4}$ inch to disengage it. The bolt No. 5 must be set so that it pushes hardest on No. 4 when engaged, the tension can be set with the nut on end of "I" bolt by screwing up or down.—B. W. HEYEN, Hewitt, Minn.



Revolving Gate for a Stream

WHERE a fence crosses a stream it is a proposition to fix an inclosure that will not be taken out with the first flood that comes. A revolving



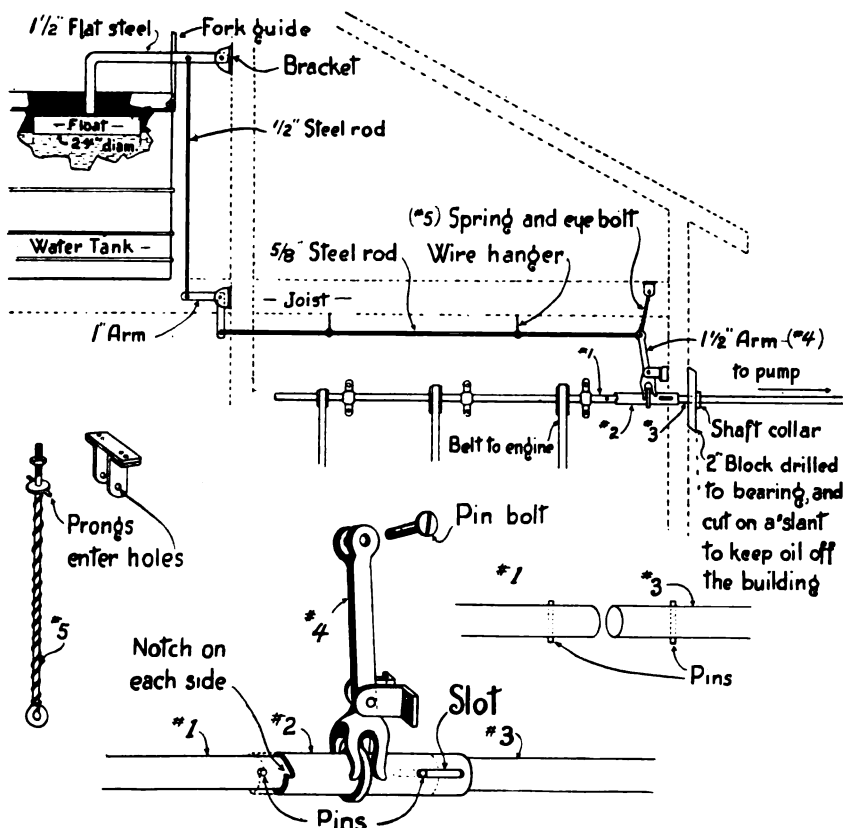
This Gate Revolves with Stream and Turns Back Cattle.

gate seems to answer the purpose better than anything I have yet tried. It is shown in the sketch below. This gate will keep stock in, but will not collect trash, floating poles and other debris. Pieces of 2x4 or 2x6-inch lumber can be used for the crosspieces at each end. A piece of gaspipe is used for the axle or spindle. Dimensions of gate depends on width and depth of stream.—Robert H. Neill, Ottawa, Ohio.



Concrete "For Sale" Sign

SO many of the broad-minded type of tourists pass along the highways that it often proves quite profitable to advertise farm products. A neat looking sign post with a space for the listing of special bargains (the things we have the most of), will often produce gratifying results. In the first place, tourists traveling equipped with the essentials of out-



Plan and Details of an Automatic Engine Pump Stop.

door living are glad to pay as much or more than what the same produce will bring on the market in town. And they like to see the place where it was raised.

The sign post shown is of simple design, being entirely of concrete, save the panel insert of 2-inch wood. It may be cast in a wood form, no inner form being required, with the panel tacked



Farm Concrete Bulletin Board.

to the front of the outside form. If half square strips are placed in the corners of the mould or form, the appearance of the finished post will be enhanced.

The panel itself should be given several coats of black paint and this trimmed with white lines one-quarter or half inch wide. Something on the order shown will prove effective. If desired each notation may be made on a wood strip, say four inches wide, and when one is to be changed it can be taken to the house and fixed up more carefully than would be possible at the roadside.—D. R. V. H.



Engine Ignition From Light Plant

OWING to the increasing number of farmers who are using electricity on their farms, I have a help that I thought might save some farmer quite a bit of time and expense. It is a way of connecting up electricity from a home lighting plant or highline so that it can be used as ignition on a farm engine. I worked it out and have been using it successfully for four years. Referring to the drawing: 1 and 2 are lead wires from light line. Now let us follow wire No. 2 in the drawing. There is a break at the switch for this is to represent a double pole, single throw switch. This wire is attached to the ground terminal on the engine. The ground terminal may be any convenient point on the engine or engine base other than the igniter terminal. If a single pole, single throw

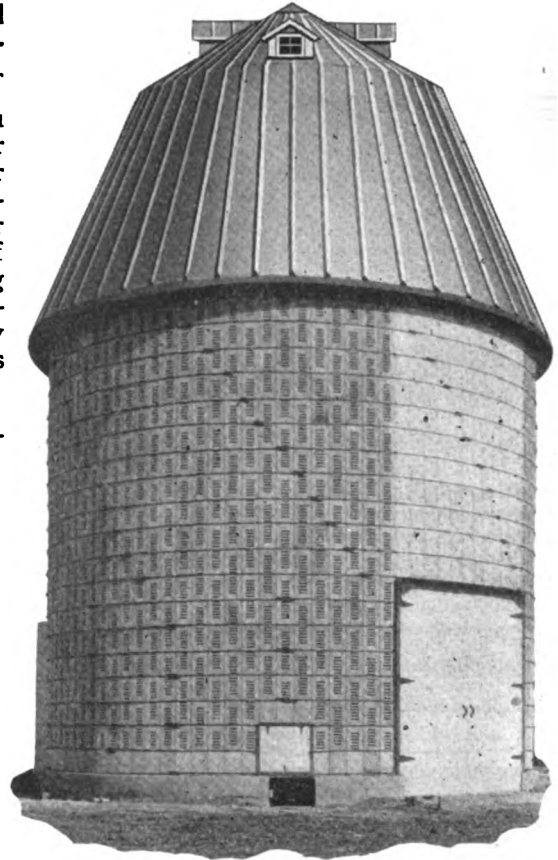
PERMANENT

100-YEAR CONCRETE PRODUCTS
LAST AS LONG AS YOUR FARM

Protects your Grain and
your Animals—Safe-
guards your Property.

This Crib insures you against Fire, Weather and Rats. Has better ventilation and protects the grain better than any other kind of crib. It is everlasting and inexpensive, improves your property and pays big returns on the investment.

Send for further information.



PATENTED

Our 100-Year Staple Post is the only concrete post in the world into which staples can be driven AND THEY HOLD.

This post will not Burn, Decay or Split.

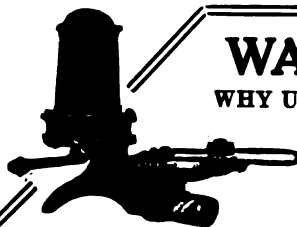
Protect and beautify your property by permanent Concrete Posts. We will furnish posts or rent mold equipment with complete instructions to make them by the year. They are inexpensive and easily made.

Agents desired

**PERMANENT PRODUCTS
COMPANY**

15TH FLOOR MARQUETTE BLDG.,

CHICAGO, ILL.



**RIFE
Hydraulic
RAM**

RIFE ENGINE CO., 143 Cedar Street, New York City

WATER WITHOUT FUEL

WHY USE gasoline, coal and oil when your water can be pumped without the cost of either. The prices of all are advancing steadily. Now is the time to economize by using labor-saving and expense-free machinery.

The Rife Hydraulic Ram will give you a permanent water system without care, fuel or upkeep—if you have a spring or stream on your farm with a fall of 3 feet or more and a flow of 3 or more gallons a minute.

The Rife Ram works day and night, winter and summer. It requires no repairs and no labor; there is nothing to get out of order. Someone near you is using a Rife Ram and will verify this.

Our experts will advise you fully how to install and use the ram. This service is yours for the asking. Write today.



MAKE MONEY DIGGING CELLARS AND DITCHES or GRADING ROADS with a KEYSTONE EXCAVATOR

We can put you into a contracting business that is not crowded and worked to death, where your only competition is hand labor at four times the cost.

Only a small amount of capital is needed. The machine will pay for itself in a season's work and pay you steam-shovel operator's wages and a good profit besides. Our demonstrator will teach you to run it in a few days.



The Keystone Model Three is Light, Portable, Low Priced and can be equipped for all kinds of excavation jobs with three different buckets

Skimmer, Ditcher and Clamshell. Get ready to cash in on the Building Boom. Ask for catalog and our "Proposition to Cellar Diggers"

Keystone Driller Company, Beaver Falls, Pa.

Save Money! Do Your Own Concrete Work



UTILITY SHOVEL MIXER

Don't put off needed improvements. The UTILITY SHOVEL MIXER and UTILITY MOULDS for making all kinds of concrete products completely solve the high cost of building problem.

Great opportunity to get into big money making business.

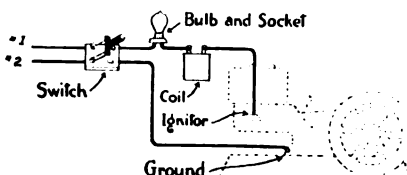
Write for catalog and complete information

Concrete Equipment Company
600 Ottawa Ave., Holland, Mich.

Make Money! Do Your Neighbors Work

switch is used, this wire will not be attached to the switch but will run direct to the ground terminal on the engine.

Wire No. 1 is broken at the switch whether single pole, single throw, or double pole, single throw. Also at the wall socket (W. S.) and again at the coil before reaching the igniter terminal. A common light bulb is screwed into the wall socket to act as a resistance coil or governor on the amount of current to be used for ignition purposes. This light bulb must be the same voltage as



Plan for Ignition System from Farm Electric Plant.

the current in use. (If it is a 32-volt current use a 32-volt bulb, if a 110-volt current use of a 110-volt bulb, etc.), and of the wattage to get the desired spark. If the engine is in a warm shop or basement a 25 or 30-watt lamp is large enough for year-round service, but if it is out in the cold and you want to start it in zero weather, and below, use at least a 50-watt and a 75 or 100-watt lamp is better. The higher the wattage the hotter the spark.

The coil is a common battery coil. It should correspond with the type of ignition on the engine. If it is a make and break ignition use a make and break battery coil, and if a jump spark ignition use a battery coil of the jump spark type. If the ignition is of the jump spark type the engine will be equipped with a spark plug instead of igniter. The coil will take the current drawn by the light bulb, intensify it and deliver a good fat spark at the igniter or spark plug.

If you desire to use the engine at a number of points about the farm, get a screw plug and a sufficient length of lamp cord and then you will be able to get ignition wherever there is a lamp socket.

If this system is to replace the oscillating magneto it will be necessary to reverse the action of the igniter points. The order with the oscillating magneto is points together except when firing and the order with this system must be points apart except when firing.

I have used all makes and types of ignition and I find this is more dependable than any of them and much less expensive. You will never notice the current that will be drawn for ignition if you follow these instructions exactly.

—Harold Crow, Wapello, Iowa.

Make Your FORDSON SELF-STEERING

with the

TractorSteer

Steering Device

\$3.75

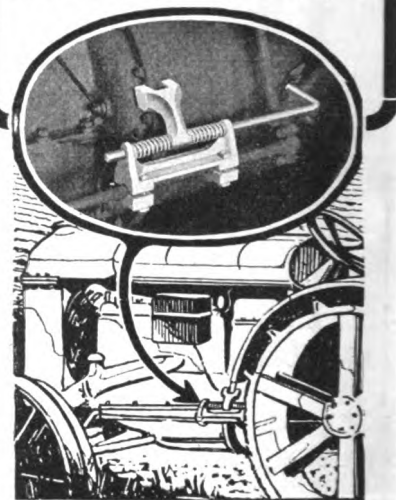
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Makes Plowing Safe and Easy

Dealers: This is a "red hot"

Seller—Write for Discounts

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A FREE BOOK

"SHORT CUTS" TO GOOD
CARPENTRY ON THE FARM

In this FREE book, you'll not only find out *why* the ideal lumber for *all farm needs* is genuine

"TIDE WATER"
CYPRESS
"THE WOOD ETERNAL"

but, also, 12 FULL-SIZE WORKING PLANS (all the home carpenter needs) for:

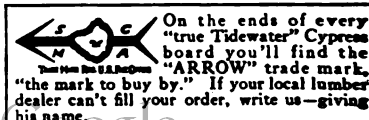
BOX SILL, JOIST & STUDDING, WALL CONSTRUCTION, CORNICES, KITCHEN CABINET, HOUSED STRING STAIR, STRAIGHT STAIR, TRUSSED BARN, BRACING TO PREVENT SPREADING, END AND SIDE WALLS FOR HAY BARN, SELF-SUPPORTING ROOF, AND PLANK-FRAMED TRUSS.

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(Address the office nearest to you)



On the ends of every "true Tidewater" Cypress board you'll find the "ARROW" trade mark, "the mark to buy by." If your local lumber dealer can't fill your order, write us—giving his name.



KEYSTONE

In every town of 5,000 and over

A NEW AND PROFITABLE BUSINESS AWAITS

the live contractor who will make a specialty of Digging Cellars, Grading Golf Links, Lots and Drive-ways, Excavating Drainage, Sewer and Water Line Ditches, etc.

The Keystone Model Three Light Steam Excavator, by a simple change of scoops, will do cheaply and well all these things and many more.

Let us tell you how, with our assistance and a very modest amount of capital you can possess yourself of a steady, safe, certain, permanent and very profitable business.

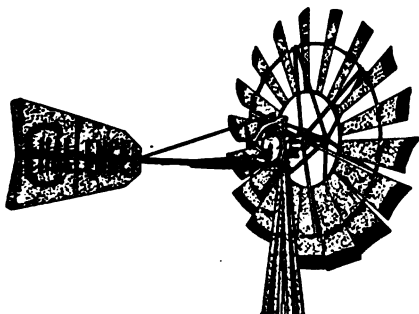


NO COMPETITION BUT HAND-LABOR AT FOUR TIMES THE COST

Our demonstrator will teach you to run the machine in a weeks time. Get ready for the coming building boom and ask for the catalog now!

Keystone Driller Company Beaver Falls, Pa.

Have YOU Seen the CHALLENGE Self-Oiling Windmill



If not, go to your dealers or send for our three color folder describing it. Fitted with the famous **HYATT ROLLER BEARINGS** with oil reservoirs. The lightest running, simplest and strongest mill made. The mill you should have for your farm.

Challenge Company

188 River Street

Batavia

Illinois

Piston Cleaner

THE illustration shows an easily-made tool that will be found excellent for cleaning the grooves for pistons in the cylinders of any gas engine or

Corn cob may be used for handle



Piece of old piston ring

Tool for Cleaning Piston Grooves.

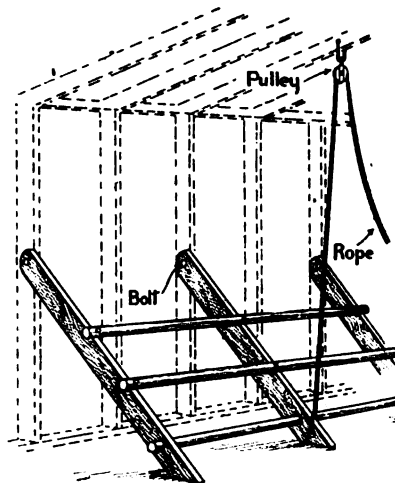
motor. Take a piece of old piston; break it so that it is about $2\frac{1}{2}$ inches long, leaving one end square; file the other end to a point so that a handle may be fitted on it. This makes a very good tool, as it cleans out the sides and bottom of the piston ring groove at the same time.—JAMES L. JONES, Los Angeles, Cal.



Movable Roosts

ONE of the hardest things connected with the chicken industry is the cleaning of the poultry houses. So many people have stationary perches and you have to stoop under these to clean it.

By the illustration given one can



These Roosts Lift Up Out of the Way.

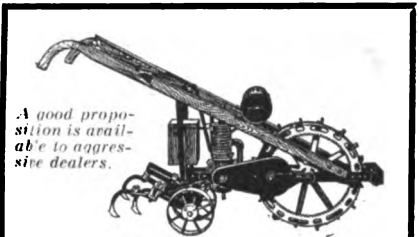
understand how to go about the work to build these movable perches. These on account of the bolts can be raised when they need cleaning.

The illustration shows just one roost, but as many as needed may be constructed and put in place.—Lloyd Lynch, Waucoma, Iowa.



To Turn Back Hogs

HERE is a device for turning hogs back from an opening in a fence and at the same time allowing horses and other stock to pass thru the open-



A good proposition is available to aggressive dealers.

Cultivation Up To The Last Minute

SUCCESSFUL gardeners realize the advantages shown in increased crops and better produce that would come from frequent cultivation up to the time of harvest.

The excessive cost of hand and wheel hoeing usually makes this impractical.

But with the **SPRYWHEEL TRACTOR** this can be accomplished at a ridiculously low cost and up to the very moment of harvest.

One man and a **SPRYWHEEL** will do the work of five men with hand hoes at a fuel cost of about 30 cents a day.

No rows too close, no crops too high to use the **SPRYWHEEL**. Changed from a cultivator to a power lawn mower in a jiffy. Strong, sturdy, and practically fool-proof.

Price—\$150.00 F. O. B. Boston

H. C. DODGE, INC.

36 Alger Street Boston, Mass.

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SPRYWHEEL

Steel Tanks

Prevent Fires

Stop Waste

Store your oil and gasoline above or below the ground in these leakless, Riveted or Welded Steel Tanks. Made to last a life time, from best $3/16$ " steel plate. Underwriters label if specified. Get the benefit of lowest prices buying by mail. Write for our FREE Book on Tanks, No. ST-3.

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When You Buy DISCS or Disc Tools

Look for the Stamp of This Mark X-stra Quality Galesburg Discs outkeener, scour cleaner and hold their edge better. Used by almost all the leading Implement Makers of America.

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Discs, Coulter Blades, Farrow Wheels

Discs for all Implements

The Grainger Pumps

Best on the Market

**BOILER FEED PUMPS
GENERAL SERVICE PUMPS
TANK PUMPS
LIGHT SERVICE PUMPS
VACUUM PUMPS**

Write for Prices

J. J. Reilly Manufacturing Company Incorporated

North Tenth St., Louisville, Kentucky

Farm Power Cheap

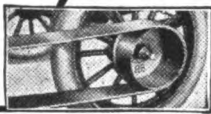
Get it from your Ford by the B B Auto Power Pulley, (attached to rear wheel with Special Hub Cap) belted to saw, silo filler, cream separator, feed grinder, pump, grindstone, corn sheller or washing machine.

B B Auto Power Pulley

Makes a regular power plant of your car—saves no end of hard work—makes you money. Always on the job, anywhere your auto can go—never gets out of order—can't damage car. Put on or taken off in a minute.

Send \$5.65 today for B B Pulley for Ford with Hub Cap --- GUARANTEED. \$7.65 for other cars. Folder free.

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24 Davis St. Bushnell, Ill.



**Double
Your
Ford's
Value for
\$5.65**

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WIRELESS RADIO

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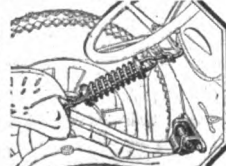
Milwaukee Air Power Pump Co.
Milwaukee, Wis.

BURPEE-JOHNSON

Fordson Tractor SHOCK ABSORBER

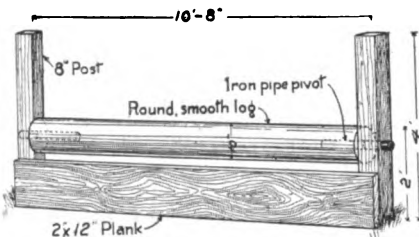
Saves the driver—giving a full day's work from the tractor. Easily installed. Sold by all Ford dealers. Write us for booklet on Burpee-Johnson Ford products.

Indianapolis, Ind.



WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

ing. It is just a log, pivoted between two fence posts at such a height that most animals can step or jump over. If a hog tries to climb over the log it will roll and the animal will fall back. A



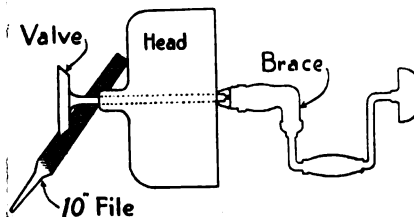
When a Hog Tries To Climb This Stop the Roller Turns Him Back.

few trials teaches him that he can't get over. A smooth, round log, 8 to 12 inches in diameter, is pivoted on pieces of iron pipe into which bolts driven into the posts fit.—PETER B. JOHNSON, Fairmont, Minn.



Improved Valve Grinder

JUST the other day I was grinding the valves in my automobile. One valve was badly burned and gummed with carbon on one side. I had no new



Home-Made Valve Grinder.

valve and was eight miles from the nearest dealer from whom I could obtain one. I put the valve into the cylinder head wrong end to, then with a brace fastened onto the head I turned it while a file was held against the face and braced on the cylinder head, as shown in the illustration. This acted as a turning lathe and with only a little turning the valve had a perfect seat. This method can be used on valves in any car that has a valve-in-head motor.—I. A. MADSON, Wheatland, N. D.



Saw Rig for Fordson

WHILE reading the FARM MECHANICS I noticed the question as how to make a wood saw outfit for the Fordson tractor.

I have been using an outfit on my tractor and have got good results from it. It is easy to handle. All that is necessary, to move from place to place, is to raise the saw upright and "chain" to back of radiator. It needs no fastening to the ground when sawing, and is quickly removed from tractor when not

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"Little Wireless Phones for the Ears" require no medicine but effectively replace what is lacking or defective in the natural ear drums. They are simple devices, which the wearer easily fits into the ears where they are invisible. Soft, safe and comfortable. Write today for our 168 page FREE book on DEAFNESS, giving you full particulars and testimonials.

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Tells how to make hundreds of farm, garage, tractor and auto repairs. Smooth-On Iron Cement No. 1, stops leaks, cracks or breaks in pipes, stoves, furnaces, concrete and household articles. Makes permanent repairs. Write for free Booklet. Smooth-On is sold in 6 oz., 1 lb., 5 lb. and larger sized tins at hardware and general stores.

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Mule**

The most efficient Tractor in America

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**KEEP
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ENGINE
CLEAN
INSIDE**

Simple, scientific device that creates actual power out of waste gasoline. Removes and prevents carbon. Improves any car, new or old. Install them yourself in 10 minutes. 10 Day Trial — Guaranteed 100% Efficient. Money back if not satisfactory. Ask your dealer. Write us direct if he can't supply you.

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Simplest — Most Durable — Easiest
Installed Speed Governor on Market

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Reg. Parts Discount to Ford Dealers

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Write for free circulars on Phillips Electrical Tractor Starting and Ignition testing devices.

Price, \$9.75

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FORDS run 34 Miles

on Gallon of Gasoline
Wonderful new carburetor. Guaranteed to reduce gasoline bills from one-half to one-third and increase power of motors from 30 to 50%. Start easy in coldest weather.

Sent on 30 DAYS' TRIAL
Fits any car. Attach yourself. Fords make as high as 34 miles to gallon. Other cars show proportionate saving. Send make of car and take advantage of our special 30-day trial offer. Agents Wanted.

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3331 Madison Street Dayton, Ohio

WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

New 1½ H.P. CUSHMAN

For Light Jobs

A little wonder—regular Cushman quality. Different, better, fewer moving parts. A real no-trouble engine for pumping, etc. Investigate.

4. H. P.

LIGHT WEIGHT 4 H. P.

For all power jobs up to 5 H. P. Improved Throttling Governor insures very steady running and less gasoline used.

Saves a Team on the Binder

Besides doing all regular jobs, this 4 H. P. may be mounted on rear of binder to save a team, and in a wet season to save the crop. We supply attachments. This engine is a necessity on every farm. Ask for book on Light Weight Engines. If interested in Electric Lighting Plants, write for free book. (12)

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½ SAVED

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DO YOUR OWN PLUMBING & HEATING AT LOW COST

By our New Cut-to-Fit Method, any handy man can install his own plumbing or heating plant. We furnish the system most suited for your building. You save unnecessary material and expensive labor. Any farmer can do the work by following our simplified installing plans and save ½.

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Our easily installed outfit and low prices will surprise you. Write today and save.

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S.O.S.

FARM LIGHT BATTERIES

for all makes of light plants. Powerful, long-lasting. Write for money saving prices.

VICTOR STORAGE BATTERY CO., Rock Island, Ill.

Get Silver's NEW BOOK

ON SILO FILLERS

Now ready to mail. Learn how "Silverized Silage" increases yield of farm stock. Our printed matter covers all styles and power cutters. Send for it.

The Silver Mfg. Co.
506 Broadway, Salem, O.



INVENTORS

Desiring to secure patent should write for our book, "How To Get Your Patent." Send model or sketch of invention for opinion of patentable nature.

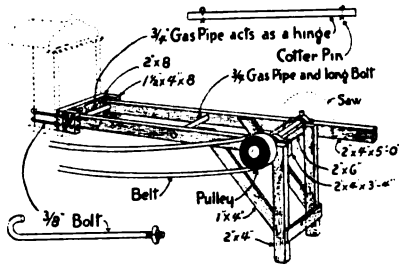
RANDOLPH & CO.

Patent Attorneys

Dept. 278 Washington, D. C.

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

in use. I find a 6 or 8-inch, four-ply rubber belt is best, as it does not stretch. No feed table is necessary with the out-

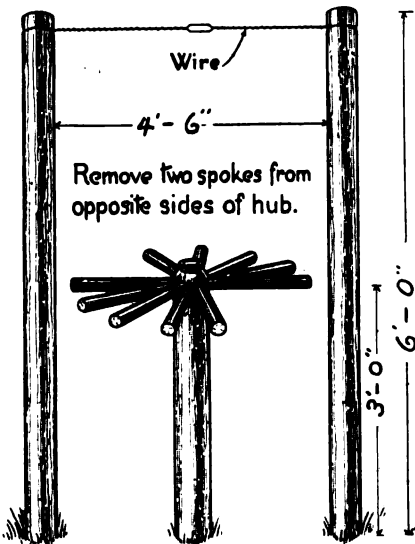


Saw Rig on Front of Fordson Tractor.

fit.—Clayton Eichelberger, Bunceton, Mo.

Pasture Lot Gate

BETWEEN two posts, extending about 6 feet above the ground, 4½ feet apart, and tied together at the tops with heavy wire, set a third post 3 feet

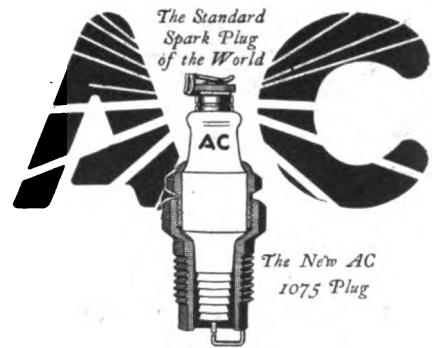


Turnstile Gate for Pasture Lot.

above the ground. Put an old wagon wheel on top of this post, removing the tire and felloe, leaving on the spokes. Take out two of the spokes, one from each side. This makes a niche into which a person may step, turn the wheel and go thru. The post and wheel will stop such animals as cows or horses and still make a gate thru which a person may pass without the necessity of opening a gate.—C. W. ROBINSON, Bushyhead, Okla.

Hard to Beat

I THINK FARM MECHANICS just as it has been would be hard to beat.—F. H. TURNER, Franklin, Pa.



Why You Should Change the Plugs in Your Ford Engine

AC 1075 Has These Big Features

- 1—Patented wire terminal clip so that you can remove and attach Ford terminal instantly, without stopping engine, for testing plug or coil.
- 2—New electrode design, forming natural drain so that no oil can lodge in spark gap.
- 3—Plug comes apart so that porcelains accidentally broken can be replaced.
- 4—Knife-edged Carbon Proof porcelain which burns off soot and carbon as fast as they form.

Most engine troubles come from worn-out or incorrectly designed spark plugs.

Install a set of AC 1075 Plugs and see what a difference it makes in performance.

If your Ford dealer will not supply you, any other good dealer will meet your needs.

AC Spark Plug Company, FLINT, Michigan

Fills Silos Faster

Who says so? USERS do. Where? In the new Blizzard catalog. Users who have tried 2 to 7 other makes say, "Blizzard is light running—does more work per H. P. Also it is Absolutely Self Feeding

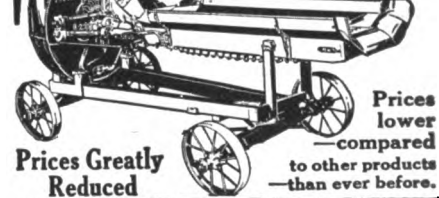
through the patented Blizzard double feed. The large capacity of Blizzards always pleases users. They fill highest silos easily—they're rugged and durable—many Blizzards 15 to 20 years old still running. They get the silo filling job done without a hitch. Let's send you our interesting catalog.

DICK'S Blizzard Ensilage Cutter 1922 Catalog

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Box 253, Canton, Ohio



Prices Greatly Reduced compared to other products than ever before.

Use Farm Mechanics Quick Sales Dept. for Quick Results

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AUTOMOBILE OWNERS, GARAGEMEN, MECHANICS, REPAIRMEN, send for free copy of this month's issue. It contains helpful, instructive information on overhauling, ignition troubles, wiring, carburetors, storage batteries, etc. Over 140 pages, illustrated. Send for free copy today. **AUTOMOBILE DIGEST**, 648 Butler Bldg., Cincinnati.

STARTERS FOR FORDS

SIMPLEX STARTER for Ford auto, \$20. Easily installed. Satisfies. **AMERICAN SIMPLEX CO.**, Anderson, Ind.

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TYPEWRITERS—All makes; \$15.00 up; guaranteed five years; one month's free trial; get our list before purchasing. **PEEKSKILL TYPEWRITER EXCHANGE**, Dept. X, Peekskill, N. Y.

ALL MAKES. \$100 used typewriters, \$6 up. Free trial. Write for illustrated Bargain List 285. **NORTHWESTERN TYPEWRITER EXCHANGE**, 320 Goethe St., Chicago, Ill.

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SWEDISH stamps free. Approval, 3c postage. **F. SEEBECK**, 1957 Toronto St., Regina, Canada.

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TOBACCO, KENTUCKY'S NATURAL LEAF mellow smoking, 10 lbs. \$2.25. Hand picked chewing, 3 lbs. \$1.00. Free recipe for preparing. **WALDROP BROTHERS**, Murray, Ky.

CANARIES

BREED CANARIES—Profitable pastime. Particulars free. **BIRD FARM**, Lynnhaven, Virginia.

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INVENTORS—Send sketch or model of your invention for opinion concerning patentable nature and exact cost of applying for patent. Book, "How to Obtain a Patent," sent free. Gives information on patent procedure and tells what every inventor should know. Established twenty-eight years. **CHANDLER & CHANDLER**, 404 Seventh St., Washington, D. C.

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PATENTS—WRITE FOR FREE GUIDE BOOK and Evidence of Conception Blank. Send model or sketch and description of invention for our free opinion of its patentable nature. Highest References. Prompt Attention. Reasonable Terms. **VICTOR J. EVANS & CO.**, 611 Ninth St., Washington, D. C.

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FOR INVENTORS

GET patent yourself. Complete instructions. **S. CECIL CUTTING**, Campbell, California.

FOR SALE AND EXCHANGE

BARREL LOTS slightly damaged Crockery, Dinner Sets, Hotel Chinaware, Cookware, Aluminware, etc. Shipped direct from factory to consumer. Write us. **E. SWASEY COMPANY**, Portland, Maine.

PHOTO FINISHING

Gumser's ART STORE FILMS DEVELOPED AND PRINTED
6 EXPOSURES 23¢
HOLLAND MICH. 12 EXPOSURES 41¢

FILMS DEVELOPED 5 ROLL, prints 8c each. **PHOTO SERVICE**, 929 McMillan, Cincinnati, Ohio.

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MAIL YOUR KODAK FILMS to us; we develop roll, make six good prints and return for 25c. Send coin or stamps. **COWIC STUDIO**, Springfield, Ohio.

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FILMS developed, 5c roll. Prints, 5c each. **RELIABLE STUDIO**, Station 10, Cincinnati, Ohio.

SEND a Postal for prices, or a Negative and dime for colored print. **A. BERGERON**, 268 Alfred St., Biddeford, Maine.

FARMS AND FARM LANDS

HOMESEEEKERS—Send for Virginia Farm List; best climate. Dept. 30, Emporia, Va.

I WANT FARMS for cash buyers. Will deal with owners only. **R. A. MCNOWN**, 302 Wilkinson Bldg., Omaha, Neb.

CALIFORNIA FARMS near Sacramento. For sale, easy terms. Write for list. **E. R. WAITE**, Shawnee, Oklahoma.

FARMS WANTED

GOOD FARM WANTED—Send description and price. **JOHN J. BLACK**, Chippewa Falls, Wis.

LIVESTOCK

WHY PAY MORE? Purebred, registered Holstein heifer calves, FIFTY dollars. Circulars free. **CONDON'S HOLSTEIN MONTE**, West Chester, Ohio.

FOXES

CHOICE SILVER BLACK BREEDING FOXES. **REID BROS.**, Bothwell, Ontario, Canada.

Sulfur Controls Potato Scab

NO longer does the grower of scab-infested potatoes have to "trust to luck" to come thru with a half-way salable crop. Sulfur in powdered form, broadcasted before the crop goes on, has made good in controlling this prevalent disease and will save thousands of dollars to growers, if they will follow the correct procedure.

Dr. W. H. Martin, who has been conducting tests for the New Jersey Agricultural Experiment Station in this line of work for the last few years, reports great success for the most part from experiments carried on this year in various parts of the state. He averages

results from six of these tests and finds that only 8.9 per cent of the tubers from untreated plots were clean, while those receiving 600 pounds of sulfur to the acre showed a production of 50.9 per cent of clean tubers.

One point of great interest in connection with these tests is that both inoculated and uninoculated sulfur were used, and in every case the inoculated beat out the uninoculated. For instance, where the production of clean tubers was 33.5 per cent after the use of uninoculated sulfur, it was 50.9 per cent where the inoculated had been applied. This difference is even more striking in the case of individual experiments; in one of these six tests, inoculated sulfur showed a result of 36.1 per cent

more clean tubers than were obtained from the use of uninoculated.

Another striking instance to show the relative results of inoculated and uninoculated sulfur treatments is illustrated by results of a south Jersey test where both inoculated and uninoculated sulfur was applied, at the rates of 300 and 600 pounds per acre. Only 17.3 per cent of the crop was clean on the plots which had received no sulfur; on those receiving treatments of uninoculated, 38.5 per cent was clean, while on those treated with the inoculated 52.6 per cent showed no scab.

On the same plots 600-pound treatments of inoculated and uninoculated sulfur produced 39.1 per cent and 75.2 per cent of clean tubers, respectively.

Inoculation of Legume Seeds

THE use of commercial or government cultures to inoculate seeds of legumes is entirely all right if they are fresh and viable; the scattering of soil broadcast on a field and harrowing it in is entirely satisfactory if a man does not have anything else in particular to do that day. However, a satisfactory and simple way is to use the "seed and soil" method which has been found to be quite satisfactory, and is as follows:

A tub or bucket is secured and filled about two-thirds full with the seed to be inoculated. A small quantity of water is poured on the seed, which is then thoroly stirred until every seed is moist, but not wet; a surprisingly small amount of water is needed for this. Then some soil from a field which has grown the crop successfully is sprinkled on the seed; if it is vetch seed which is being inoculated some soil from a field which has grown vetch successfully is used. It is a good plan to take this soil from a half dozen points in a field at a depth of two or three inches and thoroly mix the several samples of soil secured.

This soil should be fairly dry; some people spread it out in the cellar for a week or so before using it so that it may lose its excess moisture, and of course roots and pebbles are removed before the soil is used. A quart of soil is ample for a bushel of seed but enough should be used so that the seed will not be muddy or sticky. If only a small amount of water is used in moistening the seed and the soil is fairly dry a pint of soil is ample for a bushel of seed. After the seed has been stirred thoroly, so that some soil adheres to each seed, it is inoculated and ready for sowing.

Soybeans, having a large seed and a smooth coat, will take the soil better if the seed is moistened with a thin glue solution instead of with water. A 10-cent bottle of glue mixed with a pint of water may be used for moistening the seed.

In the case of alfalfa, which is perennial and a crop deserving of some extra care in inoculation, it is good insurance to use one of the other methods of inoculation in addition to the soil and seed method. Moistening the seed with a small quantity of commercial or government culture and then stirring in the soil as described above is an excellent plan.



Nothing Lacking

I LIKE FARM MECHANICS so well I do not think I could suggest anything to improve it.—W. S. BILLYCK, Elizabeth, Pa.

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NOTICE TO ADVERTISERS

Forms for the July number of Farm Mechanics will close promptly on June 15. New copy, changes and orders for omissions of advertisements must reach our business office, 1827 Prairie Ave., Chicago, not later than the above date. If new copy is not received by the 15th of the month preceding date of publication the publishers reserve the right to repeat last advertisement on all unexpired contracts.

FARM MECHANICS.

Wholesale Land Clearing in Wisconsin

IN the vicinity of Ojibwa, Wis., where there is a large amount of cut-over land, a large tractor pulling two enormous 22-inch plows has been wreaking havoc among the wild brush lands and making plowed fields out of them.

Three teams and a crew of men had hard work keeping ahead of the tractor moving the larger logs and stumps out of the way. What a contrast!! Ahead of the tractor, non-producing wilderness; behind the plows, the finest mellow loam soil begging for a chance to produce crops. The tractor pushes itself thru brush land and leaves farms behind.

There has been considerable discussion as to the advisability of plowing under heavy brush. Some of the best authorities say it is good for the land and it saves \$10 to \$12 an acre in the cost of brushing. Power plowing has opened big possibilities for rapid land clearing. The quicker the unimproved land is plowed and put to producing crops, the quicker will come prosperity.

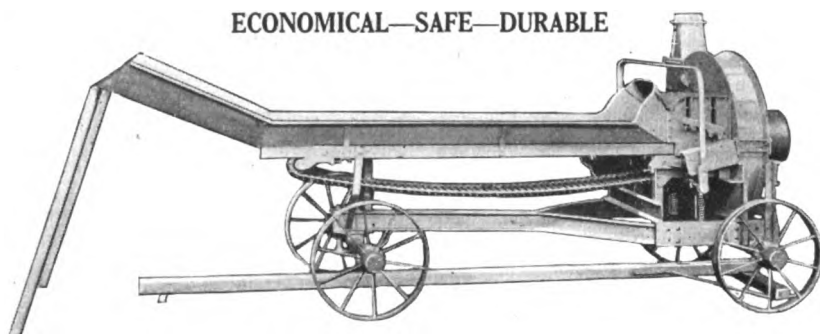
Next year every farmer now making use of the tractor will have a new acreage plowed deep with gasoline power. Then will follow more cows, pigs and chickens, more barns with silos, and then the new farm home with modern improvements.

HOW TO CUT SILO FILLING COSTS

YOU can fill your silo with less power. You can do the work with fewer men. You can be practically free from delays at silo-filling time. All this is possible if you use the new Rowell Trojan ensilage cutter.

The New Trojan

ECONOMICAL—SAFE—DURABLE



Why Trojan-Made Ensilage Keeps So Perfectly

Silage cut even lengths and with a sharp cut packs better in the silo. The new Rowell Trojan was designed to do this work perfectly. Perhaps the most important feature is the one that insures the fly-wheel being always in perfect alignment. This feature is a special end-thrust ball bearing that is quickly and easily adjusted.

Its light running features make it possible to fill silos of any height. The fly-wheel is made of one piece of heavy boiler-plate steel. This material is unusually important. No matter what might get into your cutter, this fly-wheel would not break.

The Trojan is absolutely safe. The operator is protected by a reverse lever that is handy from either side of the cutter. The machine is protected by a special automatic release on the pulleys that releases the power as soon as a stone or tool gets into the cutter.

Operated by Fordson or Other Light Tractor

Because it is so light-running, it has greater capacity for the same amount of power. While the Trojan is made in several different sizes, one size is especially designed for use with the Fordson or other light tractor. It is especially suitable for individual use, but many farmers use it for custom work.

*You should have a complete description of this machine.
An illustrated circular will be sent on request.*

I. B. ROWELL CO., Waukesha, Wis.



Humph

Henrietta—"What kind of a husband would you advise me to look out for?"

Charlotte—"You let husbands alone, my dear—it's asking for trouble—you get a single man."



He Knew

The class in natural history was reciting. Finally the teacher asked, "Where is the home of the swallow?"

Long silence and then a hand waved.

"Robert, you may answer."

"The home of the swallow," declared Robert seriously, "is in the stumick."



No! Give it to Your Lawyer

A country negro was on trial in the Supreme Court of his district for the theft of a gold watch. The evidence being circumstantial his lawyer was able to clear him and upon being told that he was at liberty to go, the negro wanted to know whether he might ask the Judge a question. "Certainly, Rastus, what is it?" said the Judge. "Jedge, Ah jes' wanted t'know, is Ah got to give de gen'man back his watch or not?"



Some Diplomat

"I'm going over to comfort Mrs. Brown," said Mrs. Jackson to her daughter, Mary. "Mr. Brown hanged himself in their attic a few weeks ago."

"Oh, mother, don't go; you always say the wrong thing."

"Yes, I'm going Mary. I'll just talk about the weather. That's a safe enough subject."

Mrs. Jackson went over on her visit of condolence.

"We have had very rainy weather lately, haven't we, Mrs. Brown?" she said.

"Yes," replied the widow. "I haven't been able to get the week's washing dried."

"Oh," said Mrs. Jackson. "I shouldn't think you would have any trouble. You have such a nice attic to hang things in."
—Tit-Bits.



"Where did I get my education? Why, me dad used to take me over his knee. He made me smart."

JULY,
1922

FARM

PRICE
20 CENTS
PER COPY

MECHANICS

TITLE REGISTERED, U. S. PATENT OFFICE

A Monthly Magazine Featuring Farm Improvements
Machinery, Equipment, Farm Buildings

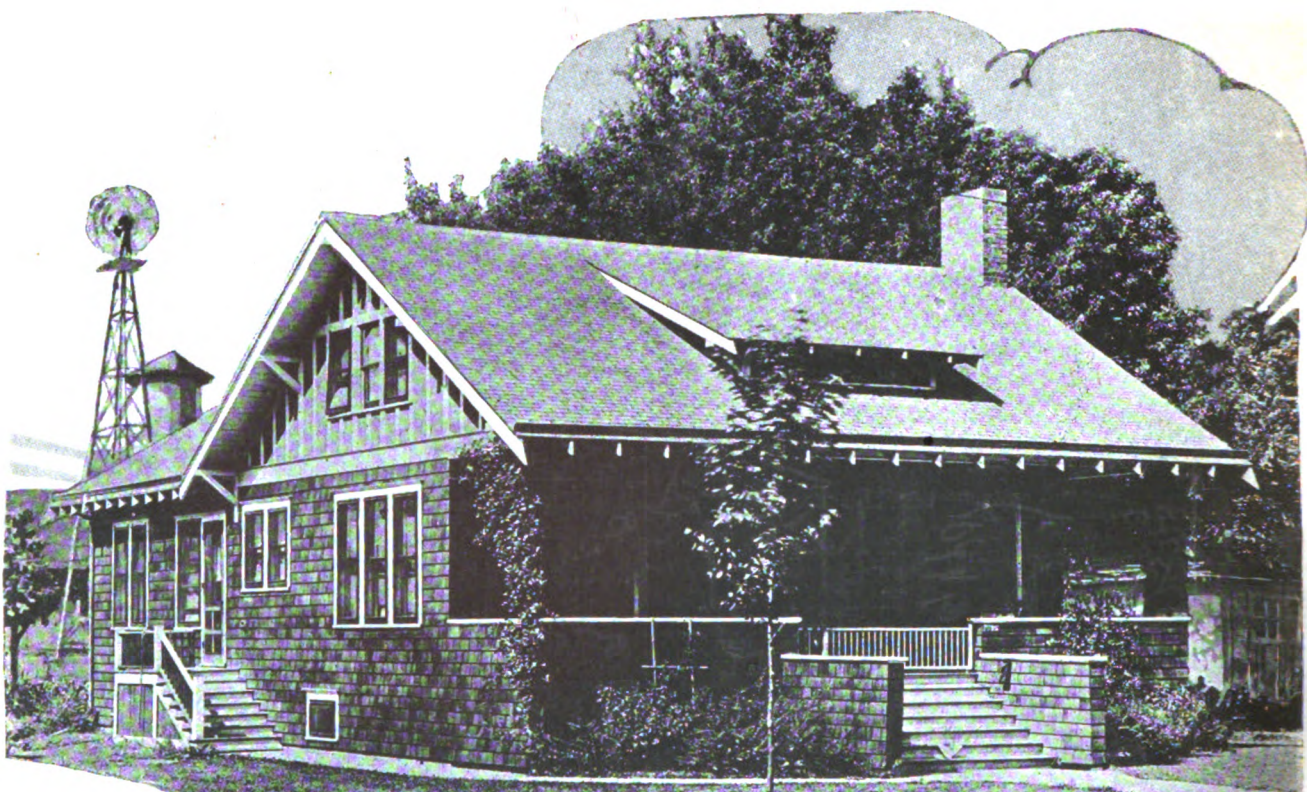


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New Idea Spreader Co. 611 N. 1st St. St. Louis, Mo.



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THIS farm home is a good example of what you can do at a reasonable cost by careful planning. A big, roomy porch, a handy kitchen and special emphasis on all the details that make a comfortable farm home.

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We are interested in your plans: and our years of experience and study in the farm building field have given us a knowledge of what has proven best in farm building construction.

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Ask your Lumber Dealer
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Buy It on *Easy* Payments

"... We believe a Kohler Automatic is a sensible and economical electrical power and light plant for the farm... the price seems right... but if we could only buy it on some easy payment plan this year, instead of face the whole cost at one time..." from a letter by a Farmer

*

*

*

PERHAPS you have long wanted a Kohler Automatic Power and Light Plant but have not seen a way to buy one.

Do as many other progressive farmers are doing—invest in a Kohler Automatic in the same way that merchants and manufacturers often purchase their equipment:

—the deferred payment way!

Buying the Kohler Automatic is surprisingly easy this way—you hardly realize you are paying for it at all.

The convenient terms offered by our dealers will please you.

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You buy a plant that is *without storage batteries*—which means no

battery upkeep or replacement expense.

All the electrical current generated by the Kohler Automatic is delivered to the point of use in its original intensity and vigor.

And it is standard, reliable 110 volt electricity, 1500 watt (2 elec. h. p.) capacity, which means that it will carry farther and do more work than current from an ordinary plant of less voltage and capacity.

A turn of any switch along its circuit starts or stops the engine and the generation of electricity.

An automatic governor regulates the consumption of gasoline to the electrical current used.

The regular price is only \$595 complete, no more than you are asked for ordinary plants which lack the Kohler's exclusive features. Price includes 55-gallon gasoline storage tank.



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Running Water



POWER
for
Washing

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**KOHLER
AUTOMATIC**
Power & Light

This compact plant combines, exclusively, the following features of simplicity, convenience and economy: (1) no storage batteries, (2) automatic start and stop, (3) automatic governor tapering fuel to current being used, (4) standard 110 volt electricity, (5) 1500 watt capacity.



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for
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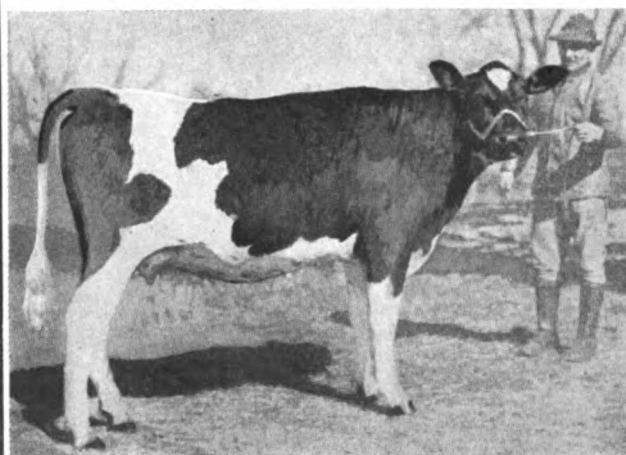
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Oconomowoc, Wis.

UNDER FEDERAL SUPERVISION

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FARM MACHINERY, BUILDING IMPROVEMENTS AND
MODERN AGRICULTURE

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July, 1922

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Spreaders of PROSPERITY

THREE hundred and eighteen New Idea and Nisco Spreaders—21 carloads—shipped June 6, from the New Idea factory, into a single territory in the East—*There's prosperity for sure!!*

Farmers, not only in this territory, but in every section of the country, are buying this "Original Wide Spreading Spreader"—an unprecedented demand. It's easy to understand—for this sturdy, light-draft spreader has for years been the acknowledged leader in the spreader field—and *the prices are at bedrock!*

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The Original Wide Spreading Spreader

Write For This Free Booklet

"Feeding the Farm" is recognized as one of the authoritative books on manure and the right way to handle and spread it. Write for your copy today!

The coupon below will bring you complete information on the "Original Wide Spreading Spreader" and the new low prices.

NEWIDEA

The Original Wide Spreading Spreader

YOUR DEALER WILL SHOW YOU

Your dealer undoubtedly handles the New Idea or Nisco Spreader. See him. Ask for visible proof of New Idea superiority. He will point out the many important features—the low construction, the perfect shredding and wide spread of this famous, light-draft spreader. Perpetuate *your* prosperity. Buy a New Idea.

See these good spreaders at your dealer's or write for circulars and prices today!

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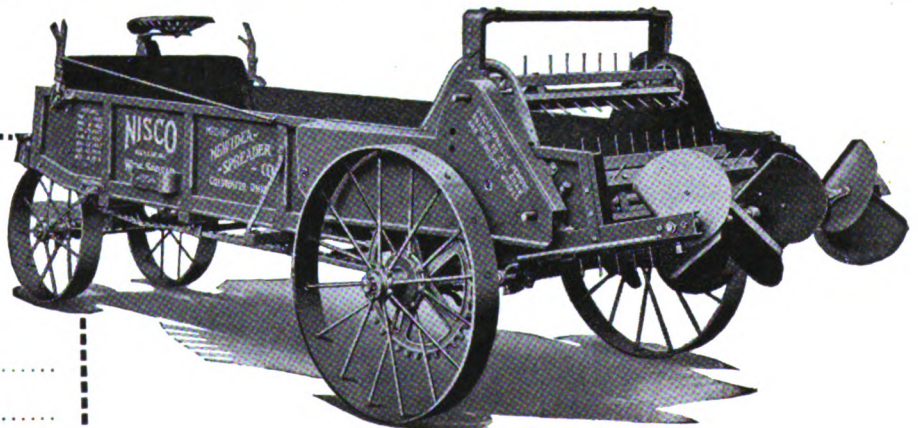
New Idea Spreader Co.
Coldwater, Ohio

Gentlemen: Please send prices and full information on your spreaders.

Name.....

Address.....

My dealer is.....at.....





In the Winter of 1858-9, John Brown of Harper's Ferry Fame, Quartered His "Army" of a Dozen Men in This Farmhouse Near Springdale, Iowa. All winter the men were drilled and schooled in the manual of arms. They left the place in April for the East. In October came the raid of the government arsenal at Harper's Ferry. The old house has not been habitable for many years, but the owner has not torn it down because of its historic associations.

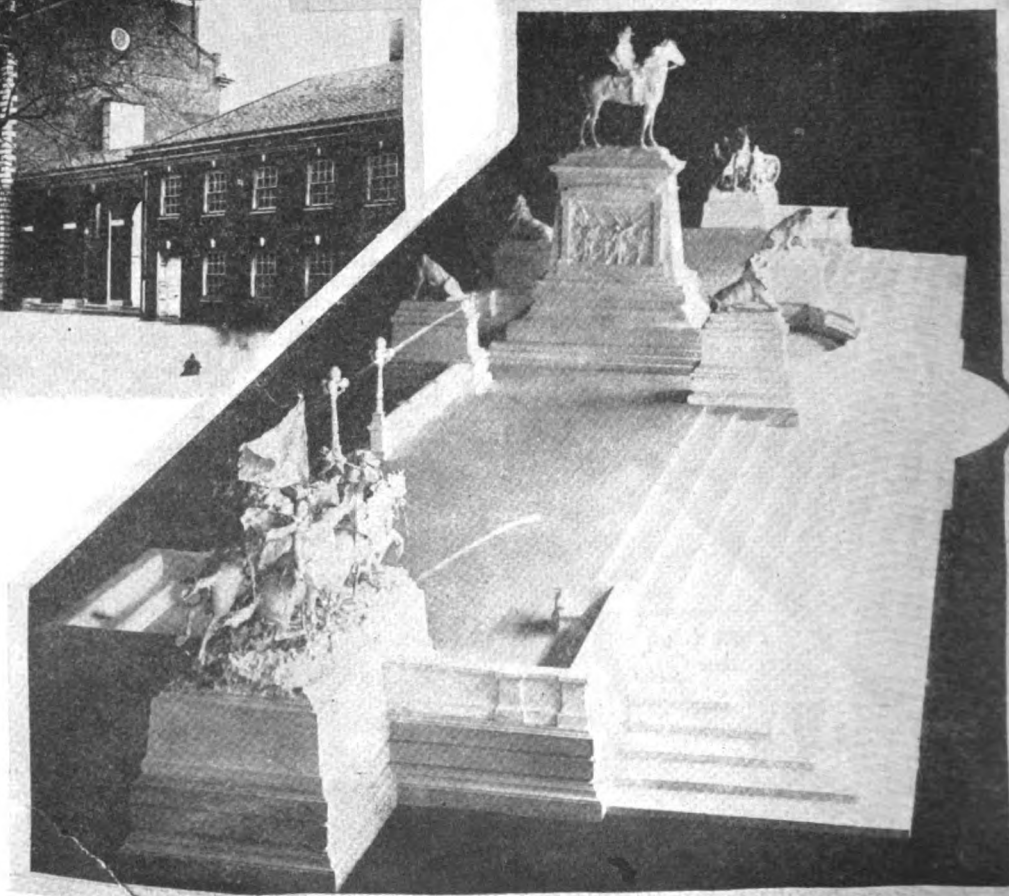
The Government Had a "Selective Draft" During the Civil War as Well as for the Late War. This wheel was used in New York State, the names being taken out one at a time, and the wheel turned between drawings.



On the Afternoon of April 27th, the 100th Anniversary of the Birthday of General U. S. Grant, a Great Memorial to the Military Leader and Former President Was Unveiled at the Botanical Gardens, Washington, D. C. The completed memorial is the result of twenty years' effort by the designer and sculptor, Henry Merwin Shrady, of New York, who died recently, shortly after completing it, and a bust to be placed in the New York University Hall of Fame. The work is pyramidal in outline, with the minor figures and groups sweeping up to the central character, General Grant astride his horse. The opposite ends are two groups, one a detail of cavalry going into action and the other a battery of artillery preparing for action. Each group faces the central figure.



Independence Hall Is One of Our Most Revered Buildings, so Strongly Is It Intertwined with the History of Our Country. In this building, situated in Independence Square, Philadelphia, the Declaration of Independence was signed on July 4, 1776, and the famous Liberty Bell, which is still there, sent forth the glad tidings to the crowd outside awaiting the joyful news.





TRESKO SECTIONAL UNIVERSAL

Licensed Under Armstrong U. S. Patent No. 1,113,149

Seven Years in Radio

The Tresko Tuners were among the first ever made under the Armstrong patent. They are found in all parts of the world, giving satisfactory service. The sectional idea is original with Tresko.

The Set Consists of Three Units:

Tuner and Detector Unit.....	\$ 50.00
Two-Step Amplifier Unit.....	35.00
Unit for holding "A" Battery.....	9.50
Top and Bottom, which when added to the three other units, makes a complete section all in one. Each, \$5; both.....	10.00
Complete Set, total.....	\$104.50

The units when assembled make a cabinet 40 in. wide, 15 in. high and 10 in. deep.

TRESKO SECTIONAL UNIVERSALS

are being supplied to dealers and jobbers just as fast as possible. Order from your local dealer. If he cannot supply you, we will fill your order.

Dealers and jobbers are rapidly finding out that TRESKO is one of the very few manufacturers who is actually in position to take care of large volume orders for immediate shipment. Liberal discounts are given to jobbers and dealers for quantity orders. Out of town dealers visiting city call at our office for demonstration. We can make immediate delivery.

W. B. SALES COMPANY
Room 605 59 E. Van Buren St., Chicago

Doing the "Impossible"
Is getting to be a Habit
with the

MILLER Tractred

The illustration shows the FORDSON with a MILLER TRACTRED on the furrow wheel only, plowing 9 in. deep with a No. 7 Oliver, while traveling up a 28% grade on intermediate speed, on a 52% hillside. This was done in loose volcanic ash soil, near Walla Walla, Washington.



Witnesses to this test declared that no other farm tractor of any kind could have gone a rod on that hillside.

The MILLER TRACTRED gives the Fordson a FOOTING in sand, mud, gumbo or other difficult soils, which enables the wonderful Fordson Engine to

exert its full power. It lays a broad, smooth, steel track for the wheels to run on; makes easy riding, and enables the man who owns a set to meet every condition of soil and climate.

When the going is good, he leaves the Tractred in the shed. When tough conditions must be

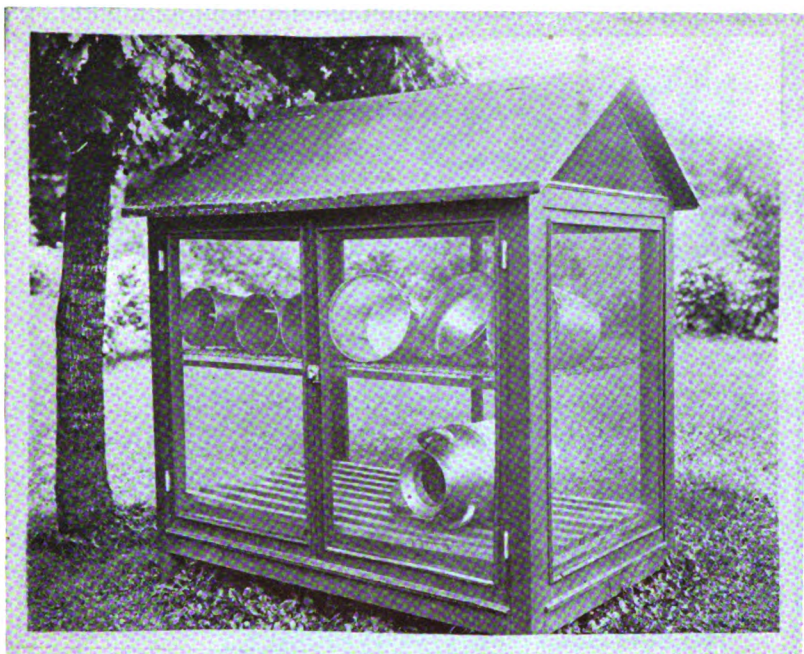
met, he slips the links on his wheels like putting on a tire chain.

The TRACTRED increases the draw bar pull 30 to 100%.

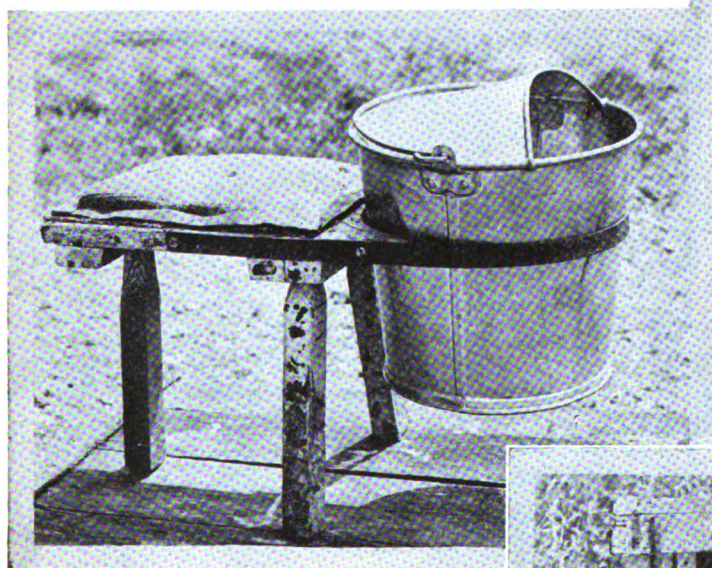
It is wonderful help in road-making, road mending, and in all sorts of heavy hauling—anywhere.

Send for our new Tractred Book, which tells by word and picture, the remarkable and useful things which this Fordson attachment is doing.

MITCHELL BLAIR COMPANY
1011 Hearst Building CHICAGO

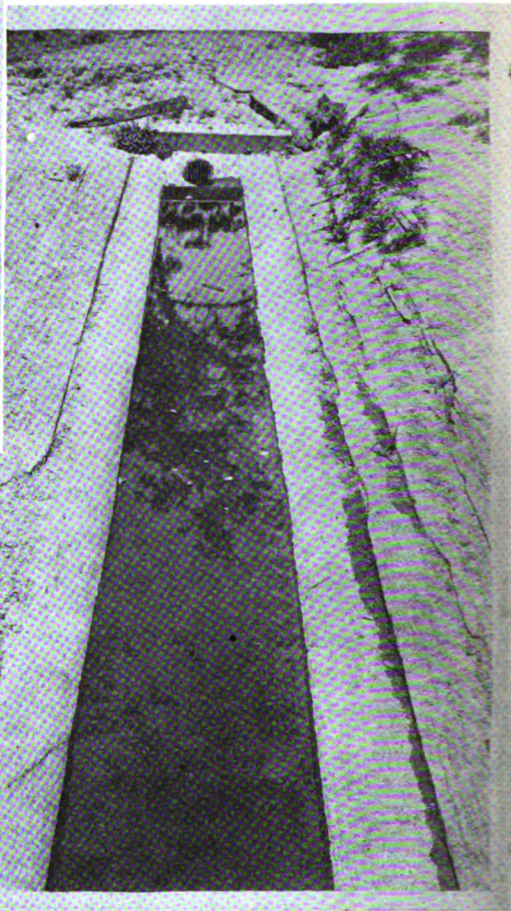


This Screened Rack for the Milk Pails and Cans Serves the Double Purpose of Keeping the Flies Away and Allowing the Utensils to Have the Purifying Effect of Air and Sunshine. The rack is of simple construction, the screened panels being of standard dimensions. The double panel on one side is hinged and a catch holds the doors in place. The photograph was taken on the farm of S. P. Chapin, Lake Geneva, Wis.

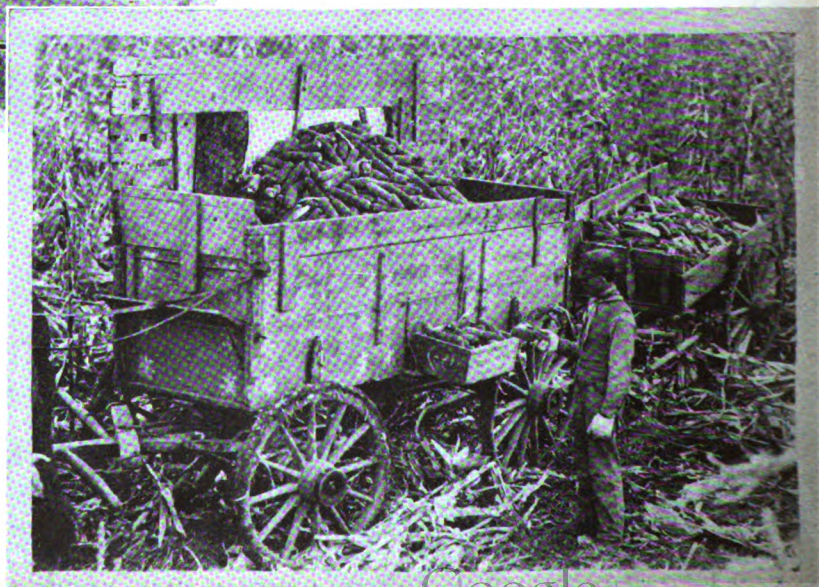


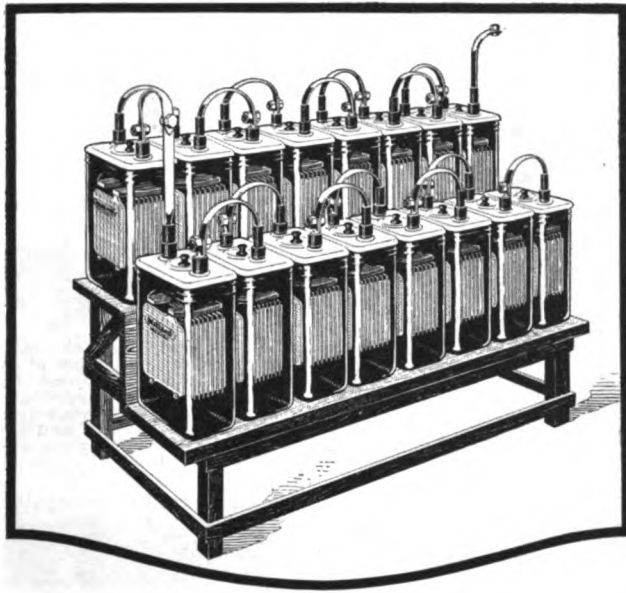
This unusual milking stool is used on the farm of F. Dale Barker, near Dayton, Ohio. As will be seen, a piece of strap iron was bent and nailed to the sides of the seat of the stool with a loop extending so that it holds the pail firmly. There is no danger that the pail will slip and the milker can do his work thoroly.

Below Is an Unusual Method of Providing a Concrete Wallow in the Hog Lot. The drain tile furnish a steady stream of water that flows thru the wallow and out at the other end.



Allen Lewis, Wingate, Ind., Devised This Wagon Outfit for Use While Husking Corn. The hard corn is husked and thrown into the wagon box, the best ears being saved for seed and deposited in the box at the side. The soft corn is thrown into the trailer and carted to the feeding floor, or the feed lot.





It Has the "Looks"

There have been many comments from disinterested persons that the Willard Farm Lighting Battery is "mighty good looking."

No doubt about it. Glass jars are well shaped—porcelain covers look neat—altogether the battery has a businesslike efficient appearance that makes it easy to sell.

And back of its looks is the quality that's characteristic of all Wil-

lard Batteries—the quality that makes it worth while for builders of 196 makes of cars and trucks to pay an additional price for the Willard Threaded Rubber Battery.

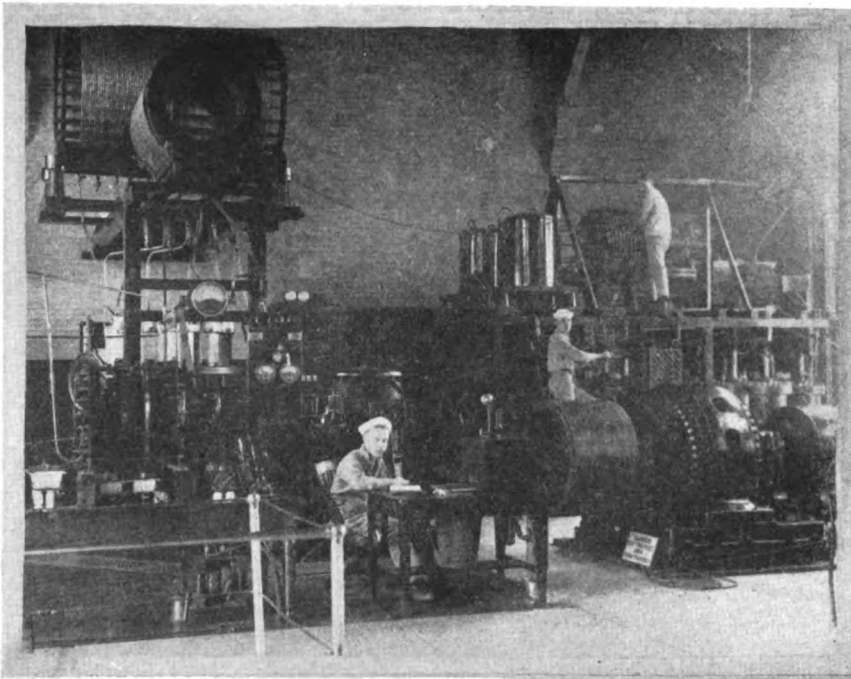
Furnished in equivalent sizes for practically all makes of farm lighting plants—cypress insulation—or the famous Willard Threaded Rubber Insulation at only a slight additional cost.

WILLARD STORAGE BATTERY COMPANY
Cleveland, Ohio

Made in Canada by the

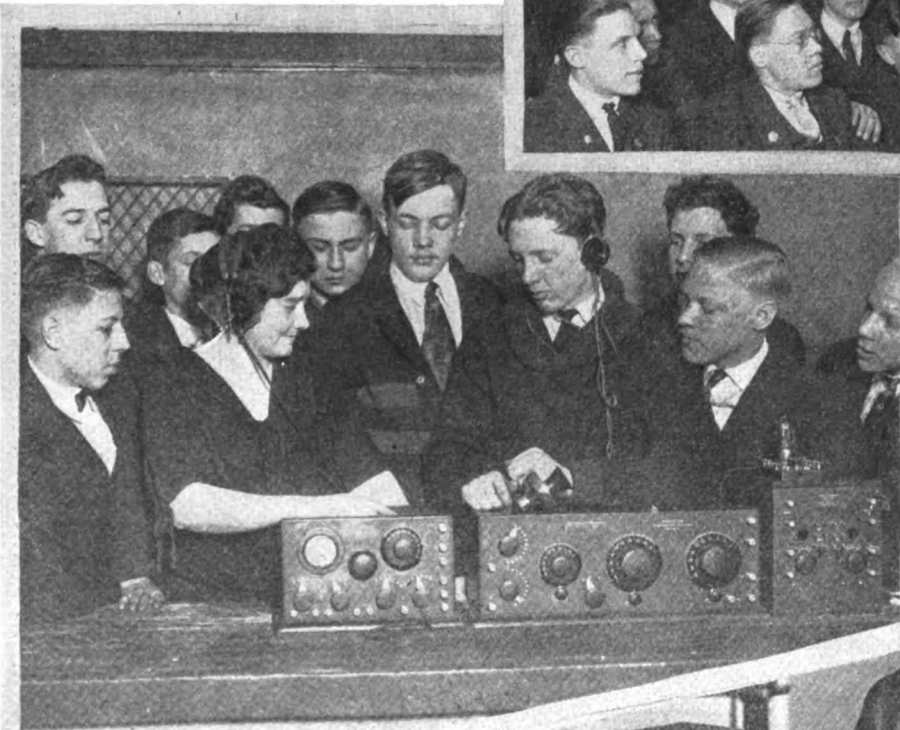
Willard Storage Battery Company of Canada, Limited, Toronto, Ontario

Willard STORAGE BATTERY



The Technical High Schools of the Cities Have Included the Subject of Radio Telegraphy and Telephony and Hundreds of Boys and Girls Are Studying the Subject. Boys, of course, are more interested in the methods of assembling and installing receiving sets, but the girls are interested students as well.

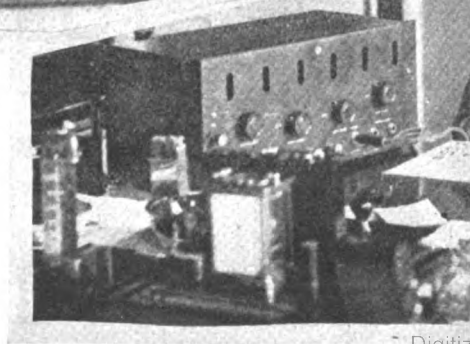
All Radio Amateurs Know of the Naval Radio Station at Arlington, Va., Which Nightly Is Heard Thru the Ether. Here's a view of the interior of the great plant, showing some of the powerful apparatus that is used to send news out to thousands of invisible listeners.



Below Is Secretary of the Agriculture Wallace Sending a Greeting to the Farmers of the Country by Radio Telephone. The message is relayed by the station at Arlington, the interior of which is shown in the top picture.



One High School Has a Young Woman Who Teaches Radio-Telephony. She is Elizabeth A. Bergman, of the Lane Technical High School, Chicago. Miss Bergman is an expert and has been very successful with her classes.



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Dependable Champions

at



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 $\frac{7}{8}$ Regular
 For Dodge Cars

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 For Buick and Chevrolet Cars

are the greatest value in spark plug quality and construction TODAY

Over two-thirds of the automobiles that sell for \$2,000.00 or more—over two-thirds of the finest, highest-grade cars are today exclusively factory equipped with

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That's convincing proof of CHAMPION Superiority. Isn't it?

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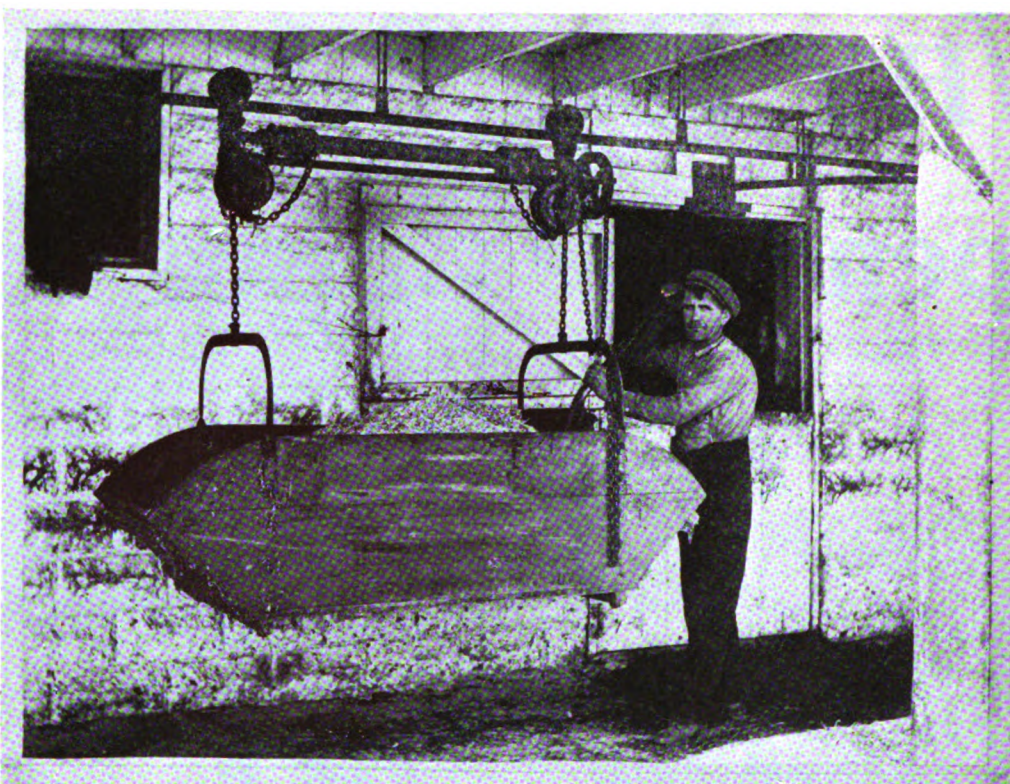
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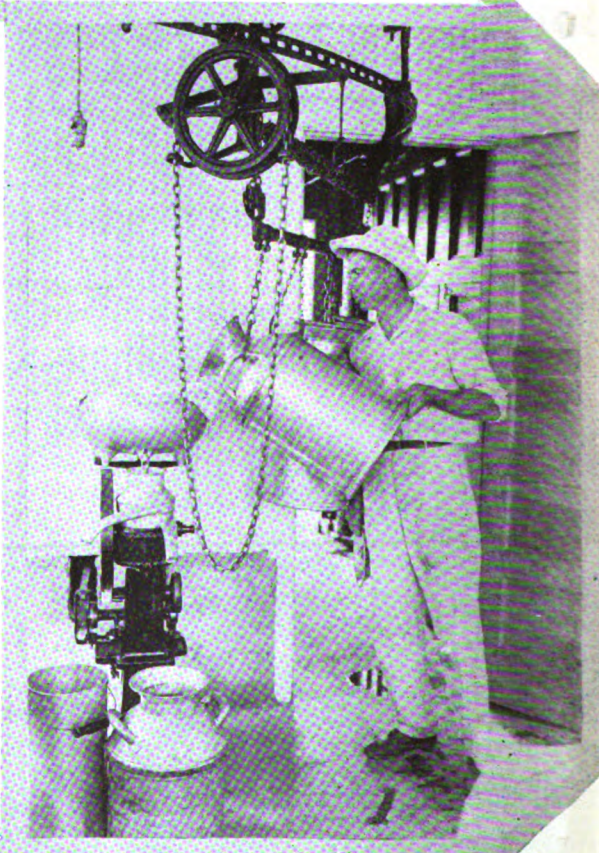
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Dependable Dealers ask you to buy CHAMPIONS—so that you may get—
“Full Service From Your Car”

CHAMPION SPARK PLUG COMPANY, TOLEDO, OHIO



Carrying Feed Directly to the Mangers by Means of an Overhead Carrier Is Another Method That Saves Labor in the Stable. This picture was taken at Orchard Lake Stock Farm, near Kentland, Ind. The feed for the purebred Herefords of this large farm is taken to the mangers, saving time and many steps for the men who care for the animals.



An Overhead Carrier System Saves a Lot of Labor on the Farm of Perry Crane, Lebanon, Ind. Mr. Crane has taken off the litter carrier and fastened chains to the bar. The ends are provided with hooks that fasten to the milk cans. It then is a simple matter to "walk" the cans to the dairy house, the interior of which is shown in the picture at the right.

The Work of the Month

NOW comes July with its intense heat and its heavy rainstorms; the beginning of harvest and the rapid growth of the later crops; lots of work under broiling sun, tempered somewhat by the fact that the season's activities are beginning to bring concrete results.



WHILE there is not much time during July to plan improvements to the farm, if building is contemplated it is well to give it the consideration it deserves, so that architect's plans may be secured to guide the builder. Well-planned buildings are the most economical, give greater satisfaction and will be erected at the least possible cost as there will be no waste space in them.



INVESTIGATORS say that the grain binder is used only about three days a year on the average farm. But it is called upon to do a tremendous amount of work during that short space of time. That's why efficiency demands that it be in its best possible condition when needed. It is a good idea to give it a trial run so that it is certain it is running smoothly; that the cutter bars are sharp, and all the teeth are on the sprocket wheels.



TRACTOR owners are having great success using their machines to haul the binder and bundle wagons. They don't have to stop out of pity for the horses under the broiling sun, and it sure does make a man pretty sore at himself and the world when one of his good work animals succumbs to the heat.



CUTTING alfalfa at the time the new growth starts at the crown and the lower parts of the old stems gives the plants a better chance to compete with weeds of all kinds and produces a better second crop. This new growth starts earlier when the season is wet than when it is dry, so a frequent inspection of the plants will be necessary to insure a crop of good hay.



NOW that the breeding season is over it is the best practice to banish the roosters from the poultry flocks. The presence of roosters has no effect on egg production; in fact, fertile eggs spoil quickly. Infertile eggs will not spoil if kept at the incubator temperature of 103 degrees for several days, while 24 hours of summer heat will spoil fertile eggs. Kill or market the

roosters that are not wanted, and confine the cockerels to be kept for breeding purposes next season.



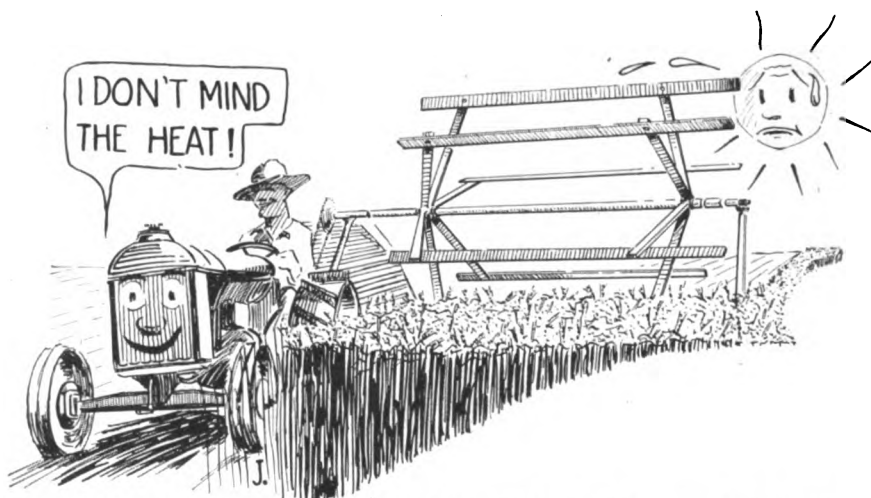
CLEANING and fumigating the grain storage houses in advance of the harvest is good practice. Putting new grain into bins that contain old grain oftentimes is merely providing fresh food for weevils and other enemies.



SHADE in the pastures where the livestock is foraging is necessary during the extremely hot weather. Hogs are especially susceptible to heat, and unless they have a shady place and plenty of clean water to drink and an accessible wallow they will not make the gains they should.



THE July sun makes cultivating corn a most unpleasant task. But cultivation is death to weeds and life to the crop.



Tractor Owners Use Their Machines in the Harvest Field and Get the Work Done Quickly.



Your Home Needs Delco-Light Now

THIS summer, this very month and day, your home needs the help that only Delco-Light can give it. Remember that late Summer and Fall are the hardest times for the farm wife. Now, more than ever, she needs a helper.

In Delco-Light you can give her a strong, tireless servant that will help her with nearly everything she has to do.

Electric light will free her from the cleaning and filling of coal-oil lamps and lanterns. Electric power will pump for her and churn for her. It will help her with the washing, ironing, sweeping, and sewing. She will finish the day less tired, fresher, better able to enjoy the well-earned leisure that evening brings.

Delco-Light will light your home, do your chores for you, bring to

every member of your family a sense of comfort and well-being, add immeasurably to the happiness and fullness of life.

The new low prices of Delco-Light will surprise you. And the Delco-Light Time Payment Plan will enable you to install Delco-Light now at a very low cost.

Write to us today for the Delco-Light catalog and full information as to prices and terms of payment.

Just fill in the coupon at the bottom of this page and mail it today.

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- is self-starting
- has a simple, efficient oiling system
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- is free from troublesome oil cups, oil pump, water reservoir, carburetor, rheostat and belts
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25 Styles and Sizes
\$250 and
Up f. o. b.
Dayton

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Subsidiary of General Motors Corporation

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DELCO-LIGHT

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Fortunate Americans

HARVEST time is a time of hard work. The sun that ripens the grains and hay also makes it comfortable for the workers—human and animal. Time, also, is a factor, for when the harvest is ripe the crops must be gathered.

American inventiveness, however, has made American harvesting the most efficient on earth. Machinery does the work of the hands; it has made possible the enormous crops produced on American farms. Were it not for machinery, we, of the United States, would have small acreages and likewise small crops.

Consider for a moment the picture in the adjoining column. Here is shown the methods used in Japan, the country that has amazed the world by the rapidity with which its people have adopted American methods and American machinery. No one in this country could consider it worth while to farm if the methods of the Japanese were necessary at harvest time.

Progress in the development of agricultural machinery is steady. The binder of ten years ago is obsolete today. Scientific investigations are making plows better adapted to different types of soils. The gas tractor has taken the place of horses in many of the heavier farm operations.

American progress in all branches of endeavor has been brought about by the replacement of human and animal labor by machinery. In this Americans are fortunate. Machinery has brought about greater production with less effort. The universal use of machinery on American farms shows that American farmers farm with their brains as well as with their hands.



Fertilizer Experiments on Wheat

THE results of two fertilizer experiments on wheat which have been in progress at Wooster for a number of years are given in the monthly bulletin of the Ohio Experiment Station.

In one of the experiments, begun in 1897, eight tons of fresh stable manure reinforced with 40 pounds of acid phosphate per ton (equivalent to about 30 pounds each of ammonia, phosphoric acid and potash, annually) has been spread on clover sod in January to be turned under for corn in a 3-year rotation of corn, wheat and clover. Part of the field has been untreated except for a liming on the corn over the entire field.

Mother Earth

CALL it not dirt, that rich black prairie soil, that mellow loam, that fertile clay! It is not dirt, that cleanly folk despise, but earth, kind, wholesome earth that all men prize, from which we came and unto which we shall return some day.

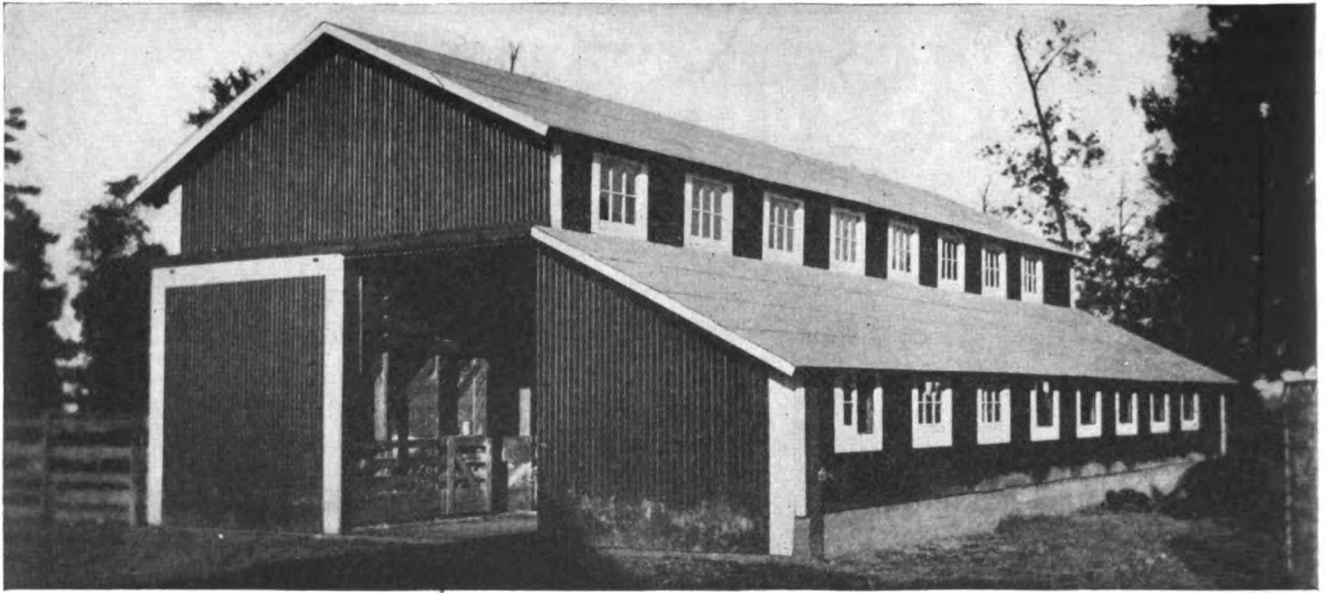
Call it not dirt, that yields our daily bread, that feeds a hundred million souls! It is not dirt, to be decried or spurned, but bounteous earth that for us all has earned good health and wealth and all we have and need, as on time rolls.

All hail to kindly, loving, lavish earth! From thee our happy homes have come, from thee have grown our towns and cities great, the countless farms that flourish in each state, the grateful folk that gladly sound thy praise, in one grand tongue.

Let no one then speak slightly of thee, but lovingly thy worth assert, and when on earth shall end our brief sojourn and to thy bosom we to rest return, "dust unto dust" we'd have the parson say—not dirt to dirt!—A. S. Alexander, University of Wisconsin College of Agriculture.



In Picturesque Japan. Woman farm workers during the rice harvesting season carrying a load of rice straw. It is not unusual for these peasant women to lift and carry loads of 200 pounds and more.



Hog House and Corn Crib, Designed and Erected by Victor Swanfelt, a Farmer Who Lives Near Elwood, Ind. Mr. Swanfelt designed this building after he had carefully considered his needs, and is pleased with the results.

Hog House and Corn Crib

Indiana Farmer Designs and Builds Unusual Farm Building and Finds It Most Satisfactory

By C. A. NORMAN

SOME hog houses are designed for hogs, some are designed for the man who cares for the hogs, while others are just houses that, perhaps, would be more suitable for guinea pigs or giraffes. When a hog house proves to be satisfactory both from the standpoint of the hogs and the man who cares for the hogs, it is worth while to study its design. Victor Swanfelt, of Elwood, Ind., has a house of this type.

When it became necessary for Mr. Swanfelt to build a new hog house he did not go to his carpenter and say, "Build me a hog house like Neighbor Jones." He got out a pencil and paper and began to write down the things that in his estimation were necessary

in a good hog house. He didn't think of all these things in one day or in seven days, nor did they come to him from thinking alone. In addition to using his thinker he used his eyes. He investigated the houses built by other hog men in his community and made note of their good points and their defects. He also studied such plans as he could find in the farm and trade papers. When he got ready to build his list had been boiled down until it read something like this:

"Must have plenty of light, direct sunlight if possible, to make house warm, dry and sanitary.

"House must be built so as to care for stock hogs as well as brood sows and small pigs in order to make it serviceable the year around.

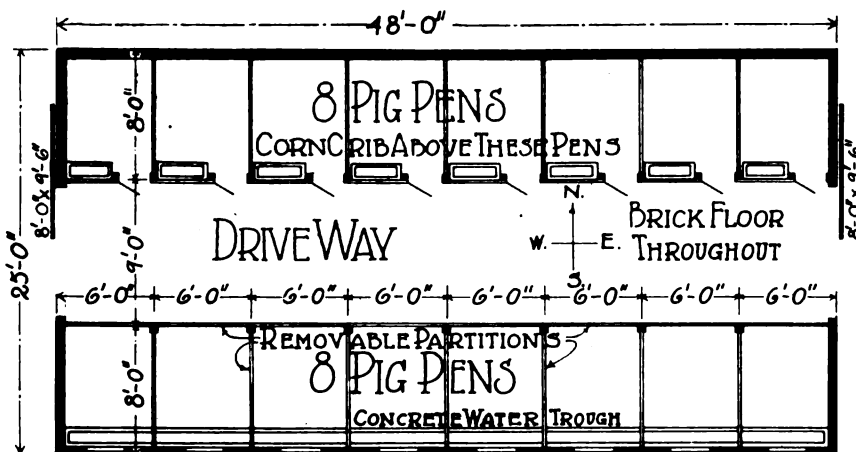
"Proper ventilation is essential to keep house dry and hogs healthy.

"Brood sows must be comfortable.

"Must be especially handy for feeding stock hogs.

"Must keep pocketbook in mind."

The next thing on the program was to work out a plan for a building that would include all the desired features. In doing this Mr. Swanfelt had an advantage over many men. He could draw a mental picture of how a structure would look when completed and then transfer that picture to paper so



Floor Plan of Mr. Swanfelt's Combined Hog House and Corn Crib.

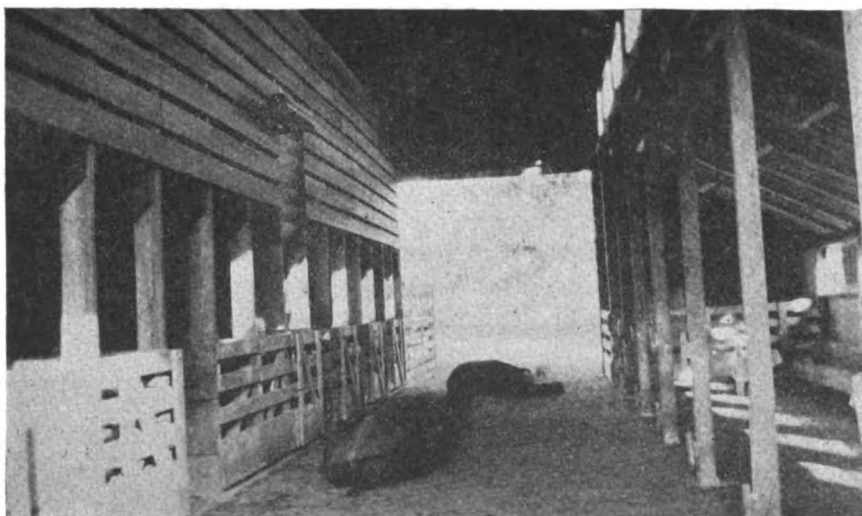
that it could be easily figured out by others.

The two illustrations show the results of his careful planning. The building was completed last fall and everything was put in readiness to care for 20 brood sows this spring. In the meantime it was used for stock hogs. During the farrowing season there will be eight 6 by 8-foot pens on each side of a 9-foot driveway. The partitions on the south side of the driveway are removable, thus providing a 16 by 47-foot feeding floor for stock hogs during a large part of the year. A concrete water trough runs along the inside of the south wall to which water is piped from a large tank in the barn lot. The trough has a slope of 3 inches in 47 feet and is provided with a drain at the lower end. Such a water system will prove very efficient, especially in the case of caring for a large drove of stock hogs. The structure has a brick floor thruout. Mr. Swanfelt says that he prefers this type of floor because it is rough and holds the bedding well.

The most original and valuable feature of the entire structure is the corn crib. It is built in over the north row of pens. The floor of the crib extends out five feet from the north wall, three feet above the floor. The remaining three feet to the driveway is built on an angle of 45 degrees, bringing it six feet from the floor at the front of the pens. This affords ample room for feeding and for cleaning the pens and also prevents the crib from cutting off the light from the upper tier of windows. The crib is filled from the driveway and has a capacity of 1,300 bushels, as well as some space for mill feeds and tankage at one end. This combination makes it possible to shovel corn directly onto the feeding floor.

The cost of the structure itself was \$680, including both material and labor. Number 1 material was used thruout. Concrete walls extending one foot above the floor line were used for the foundation. Three-ply prepared roofing was used for the roof and the walls were given three coats of good oil paint, all of which make for many years of service.

Since the building was completed a number of hog raisers have visited Mr. Swanfelt and asked permission to study the construction of the house. Such permission is always



Interior of the Hog House and Corn Crib, Showing the Removable Pen Partitions by Which One Side May Be Turned Into a Feeding Floor.

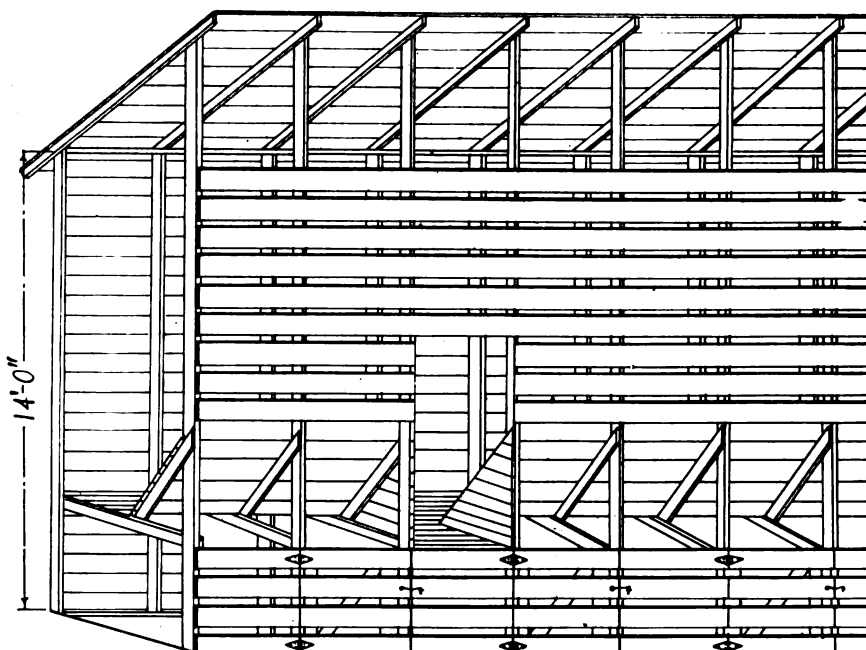
granted, for Mr. Swanfelt believes that he who serves his fellowmen best shall receive the greatest reward.



WHEN the tractor is at work in the field the engine is running at top speed and it is surrounded by dust that is bound to collect on the engine and other parts of the machine. The speed of the tractor is a strain and the vibration tends to work the parts loose. Whenever there is time it is a good idea to clean the machine and go over the parts to see that they are tight. A little care will prolong the life of the tractor and keep it in better running order.



BY following the reaper as quickly as possible with the plows and turning under the stubble, the Hessian fly will be hard put to it to maintain life. Besides, early plowing is good for the land.



Drawing Showing the Arrangement of the Pens Underneath the Corn Crib.

Farmer Boy Rises to the Top

Thirty-one Years of Service Brings Presidency of International Harvester Co. to Alexander Legge, Who Left the Farm to Sell and Repair Harvesting Machinery

ON many pages of history are recorded the attainments of the farmer boy in business. He is famous for his ability to go out in the world and reap unusual rewards. But that is as it should be, because the training he gets at home assures this result. The things he learns and the habits he forms lay a foundation that solidly withstands the temptations and many destructive influences of the city. Every farmer boy ought to realize that his course of hard work steadies him and that the many useful tasks but tend to give his character an exceedingly practical turn. He absorbs an ability to think soundly on economic problems and he grows deeply in self-reliance and becomes independent in his judgments. That these things are generally true most people will admit, but an example which recently came to light will show how one farmer boy reached the top of the ladder. Incidentally it will indicate the opportunities to the farmer boy who maintains his faith in hard work.

On June 2 Alexander Legge, once a farmer boy, and more recently known for his war service on the War Industries Board, was elected president of the International Harvester Company, succeeding Harold F. McCormick, the son of the inventor of the reaper. Only thirty-one years ago Mr. Legge left the farm to enter the service of the company, and today he is its head and chief officer, has the direction of many thousands of employees and the responsibilities of many factories; and he also has a very important voice in shaping the policies affecting the interests of the great body of customers and stockholders.

Mr. Legge's story is a story of hard work. As stated before he grew thru boyhood on the farm, going in 1891 direct from the plow to the McCormick Company at Omaha, Nebraska, selling to customers and repairing their machines. Promotions came rapidly,

and eight years later he was ordered to Chicago to take entire charge of the company's collections. He continued to grow in the confidence of the management, taking on greater responsibilities as the years went by. Three years ago he attained a vice-presidency and today is the president of the company.

Thus briefly are marked the steps by which a farmer lad has attained high reward for qualities which every farmer boy of today may well emulate. He will feel an incentive to use his own natural abilities and opportunities to build a worthwhile structure of character and experience. Mr. Legge did not know education as the farmer boys and girls of today know it. He did not have the ad-

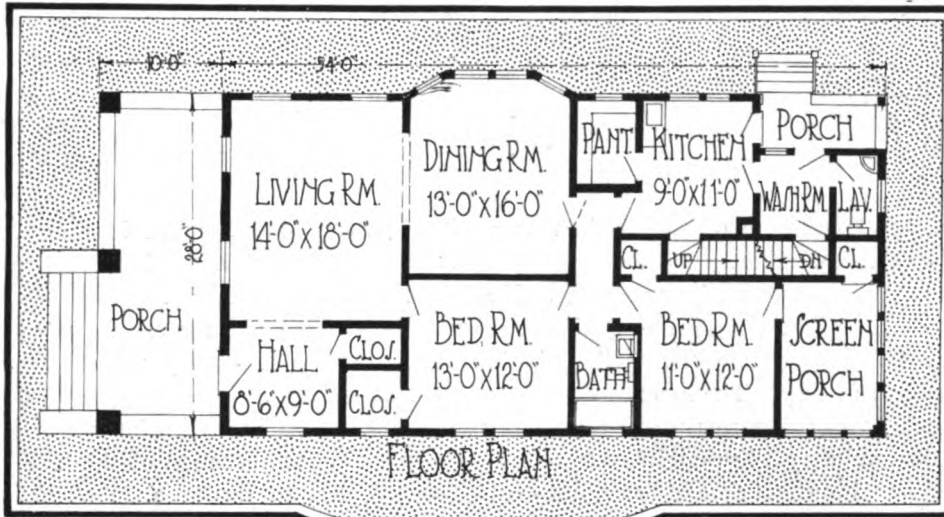


Alexander Legge, President of the International Harvester Co.

vantages of the consolidated rural school—he did not get even to high school. But he did work hard and made the most of every opportunity!

Mr. Legge believes in hard work for success; he has practiced that belief from his boyhood days on the farm. As a factor in success he has also positive ideas about the giving of service. From his first day with the company back in 1891 he has been trained to consider the promotion of sales worthy only when that is accompanied every step by a proper, adequate, and generously shaped policy of service. In addition, he has the boyhood experience on the farm, thirty-one years of close contact with farm problems.

FARM MECHANICS BUILDING DESIGNS



FIVE-ROOM FARM BUNGALOW. The frame bungalow shown above is adapted for either a tenant house or home for a small family. It is 28 feet wide and 54 feet long. The floor plan shows five rooms and bath and a screened porch at the rear that may be used as a sleeping porch. The gable roof gives space on a second floor for two extra bedrooms, should they be needed. The arrangement of the rooms and the size of each are shown by the floor plans. This is an attractive appearing bungalow and is economical to build. The large porch at the front and the exposed roof rafters aid materially in the appearance of the bungalow.

Getting Back to Ideal of Land

Long Neglect of Agriculture, the Fundamental Industry, Has Been Turned Into a Proper Appreciation of Importance of Farming

By HENRY FORD

THIS is the time of year when city people think of Nature as a big showroom, filled with bloom, perfume and song. A sunnier season has come, liberating us from the protection of confining walls and the necessity of stoking fires. Multitudes of people have no other conception of spring than as a delightful change in the weather.

There is one man, however, who knows better. He knows that the first songs of the returning birds are but the whistles announcing the turning of the wheels in Nature's great food factory. The increased warmth of the earth is turning on the power which moves the processes of the first industry. Spring freshets, woodland flowers, balmy breezes, cordial sunshine—all these are to him more than themes of poetry; they are signs that for him his day's work has begun, a day which lasts from seed time to harvest.

Of course we know, even when we do not fully realize, that if the farmer should let the birds whistle unheeded, and decide to let this year pass without labor, the wheels of Nature could grind as they pleased, the sun could furnish heat and the clouds drop moisture, and it would not avail mankind. Without the labor of man—and in this relation, "man" means the farmer—the whole produce of the earth would amount to no more than matted weeds, says Mr. Ford in the Dearborn Independent.

Farming is the first industry. Without it there could be no other industry. The complete absence of steam or electric power from the earth would not result in so absolute a tie-up of effort as would the cessation of farming.

All this seems hardly worth the saying, it is so elementary, so widely known. And yet if there is any division of human labor upon which the inhabitants of large cities expend little if any thought, it is the work of farming. For all that multitudes of people know, their food is made in factories and purveyed in the stores. That the loaves of the bakeries were once brown fields of grain, the meats of the markets once grazing herds, the canned goods on the grocers' shelves once laboriously cultivated crops, is all too little considered.

The purpose in calling attention to this is not to enlarge the consideration of the unintentionally inconsiderate, but to throw a sidelight on the general neglect which has been visited on the most fundamental industry.

Because the farmer's work was done at a distance from the cities, thus preventing him from acquiring that "veneer of civilization" which goes with starched collars and polished shoes, it became a superior fancy with city people that the man who trod the furrows was their inferior. The list of nicknames applied to the farmer is ample proof of this.

Of course, the farmer had the better of this situation all the time. He could see the joke. He knew wherein his position had advantages of which city dwellers were ignorant. The healthfulness, independence, sterling honesty of the work in which he was engaged made it incomparably more desirable than the work by which many city people lived.

Nevertheless, it reacted on the farmer to this extent: for a long time the inventive genius of the world was almost exclusively exercised in behalf of the city dweller and his industries.

Machinery for city industries, conveniences for city homes, opportunities for city people, all of these commanded the attention and service of progressive leaders, to the almost total exclusion of interest in the farmer, his needs and his situation. He was remembered chiefly at the election time—and then it was to get something out of him, not to do something for him.

Only a few persons were engaged in trying to make the farmer's business more efficient, and of these fewer still did anything with an undivided purpose to aid him.

The farmer himself has furnished



Multitudes of People Little Consider That the Loaves from the Bakeries Were Once Brown Fields of Grain.

the initial stimulus for the vast improvements which have come or are coming into his business. He agitated for schools in which his boys could be taught scientific agriculture. The numerous agricultural colleges scattered thruout the land have made farming a profession and given it the dignity of an art. It was only when medical knowledge was systematized, so that it could be tested by wide experience and communicated to inquiring minds in an authoritative way, that medicine rose from the darkness of superstition into the clear light of practical science; and so with farming.

The science of the soil, the romance of rotation of crops, the creative improvement of strains of cattle, the organization of dairy production, the efficient planning of farm work and the business-like marketing of crops and produce—all these have not only given the farmer and his son the inner sense of belonging to the great world of business, but have also placed in their purse the world's certificate of service in the form of handsome profits.

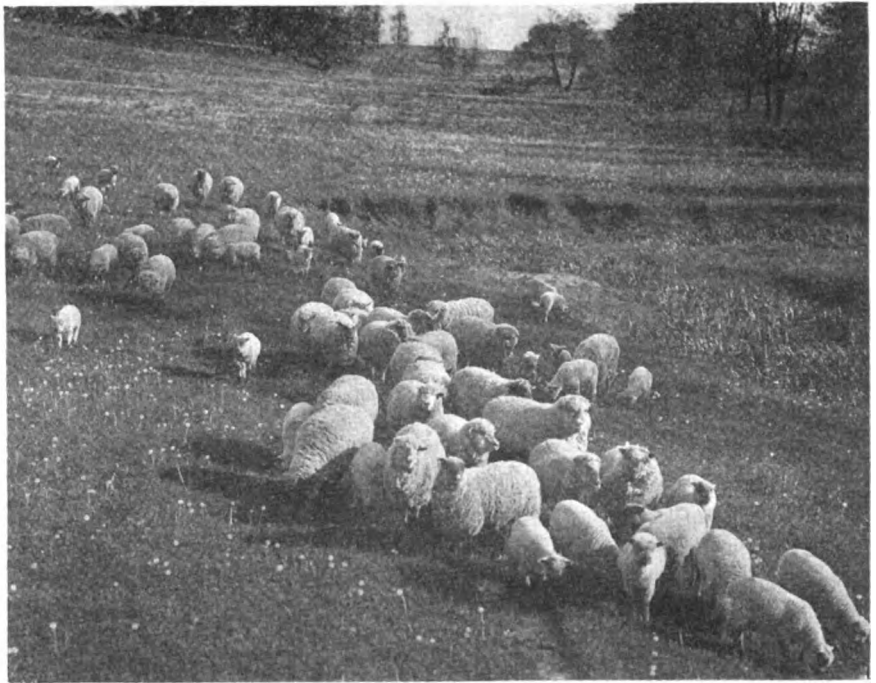
More than that, inventive genius has placed itself at the farmer's service, and it will be found that this inventive ability did not originate in cities, but on farms. One who has gone from the farm to the machine shop, or who all his life has worked at intervals in both, has a better idea of the farmer's needs and a more ardent desire to meet them, than the engineer who simply seeks to design a new kind of implement or machine to catch the farm trade.

Man-power and horse-power are rapidly receding before machine-power and water-power.

The effect of this is to decrease the number of days' work required to produce a crop, to decrease the strain upon the farmer's strength, to decrease the demands upon his financial resources; while, on the other hand, it increases the time he has for planning his work, increases the reserve of energy he can give to the mental side of his job, and makes for a larger, broader life for him generally.

Farming need not be an all-year job. The farmer, his crop harvested and his field work done, should be free to devote himself to other lines of work and so broaden his experience and improve his point of view.

We have greatly overestimated the cities—most people will agree with that. When we all stand up and sing, "My Country, 'Tis of Thee," we seldom think of the cities. Indeed, in that old national hymn there are no references to the city at all. It sings of rocks and rivers and hills—the great American out-of-doors.



Many City Folks Have Never Seen the Flocks or Herds That Supply Them with Meats.

And that is really the country. That is, the country is THE country. The real United States lies outside the cities.

The food that sustains us, the raw material that feeds our factories, the broad waterways on which our commerce floats—all of these have their sources outside the cities.

The wealth with which people speculate has its origin in scenes far different, and if you want to see the true foundations of the Treasury of the United States, look at the soil beneath your feet.

The fresh moist earth is the greatest of all gold mines, and the wealth it produces does only good and never harm.

We are going back to this ideal of the land some day. Both as an economic measure and as a plan whereby each man may get the most pleasure and profit out of life, all of us are going to be proud to be known as tillers of the soil.

Some one has humorously said that the dream of the farmer is to occupy an office in a city skyscraper, while the office man in the skyscraper has one great desire, which is to raise chickens on a farm.

Both desires are natural. The farmer wants to have his share in the busy life of the world of industry, exchange or professionalism. The worker, business man and thinker wants to have a share in the processes of nature, to bury their hands in the soil and see growing things come to maturity beneath their care.

Some day we are going to be sensible enough to see that the best thing that can happen to both classes will be such a seasonal interchange of work. The modern improvements of farm conditions are doing more to prepare for this new mode of life than any amount of economic argument to the contrary.

"Blood Tells" in the Dairy Herd

That the Bull is "Half the Herd" Is Again Demonstrated by the Daughters of "Creator" Which Are Just Beginning to Freshen at Pabst Stock Farm

IF every farmer who owns a dairy herd, no matter how large, would keep a record of the cost of feeding and caring for the cows, and a record of their production, more than half the animals would be sent to the butcher forthwith."

This statement was made recently in support of the campaigns the State Agricultural Colleges are making to impress upon dairymen the value of getting a purebred sire to head their herds.

The real test of a dairy cow is at the milk pail. It is a simple matter to compute how much revenue the cow is producing by weighing her milk every once in a while. The dairyman knows how much he is getting for the milk, and can tell pretty accurately the value of the feed the cow is consuming.

Owners of purebred herds, who are successful, place the minimum annual milk production of cows they can afford to keep at 10,000 pounds. Roughly it is around 35 pounds, or four gallons a day. Compared with the average production of the cows of the country—less than 5,000 pounds—this looks like a high average. On the other hand, compared with the production of thousands of purebreds it is low.

That "blood will tell" in a dairy herd is being demonstrated at the Pabst Stock Farm, Oconomowoc, Wis. Pabst Stock Farm was the first described in the series of "Notable Farms in Picture and Story" that have been appearing in FARM MECHANICS during the last year. Many readers of FARM MECHANICS will remember that the chief herd sire at the Pabst Farm is "Creator," a son of "Sir Pietertje Ormsby Mercedes"

and "Spring Brook Bess Burke 2nd," two notable animals of the Holstein breed.

"Spring Brook Bess Burke 2nd" has four records of more than 1,000 pounds of butter fat a year, during three of which she made seven-day records of more than 35 pounds, and has three daughters, each of which has made a record of more than 1,000 pounds of butter fat. "Sir Pietertje Ormsby Mercedes" has more 1,000-pound daughters than any other sire.

"Creator" is now four and a half years old and his daughters are just beginning to freshen. Ninety daughters of "Creator" are in the Pabst herd and they are due to freshen at the rate of three or four a month.

The first two to freshen were "Pabst Kinnikinnic 2nd" and "Pabst Vernon Queen 2nd." The former, at the age of 1 year and 11 months, in seven days, produced 455.7 pounds of milk and 21.41 pounds of butter. The latter, at the age of 2 years and 5 months, in seven days, produced 466.9 pounds of milk and 24.01 pounds of butter.

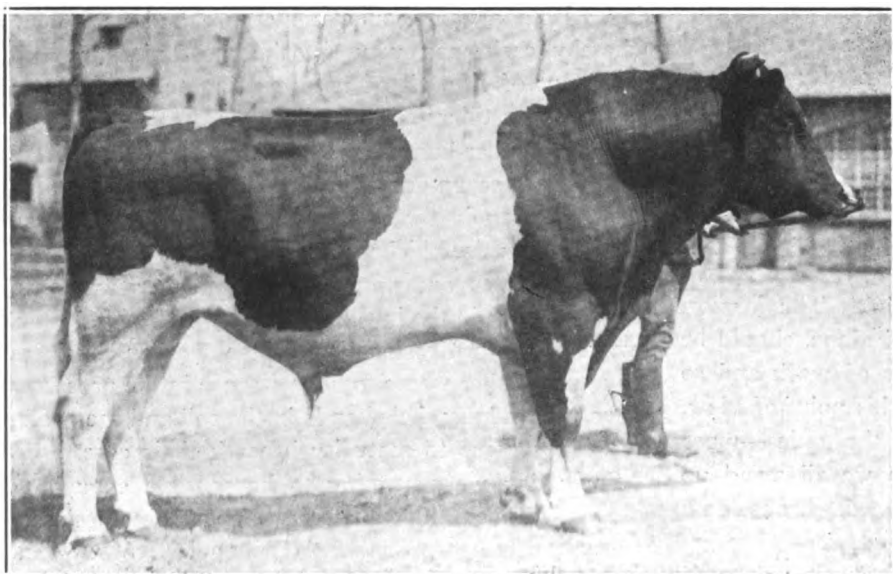
B. L. Cramton, manager of Pabst Stock Farm, sees in "Creator" one of the great sires of the breed. "His daughters all show the same general conformation as 'Creator,'" says Mr. Cramton. "They have straight tops, tremendous middles and beautiful udders." A study of the accompanying illustration, which is a reproduction of a recent photograph of "Creator," will show the points to which Mr. Cramton is referring.

In three generations a herd of ordinary dairy cows will lose in their sons and daughters most of the characteristics of the foundation cows and appear to be purebreds. This is called "breeding up." And when a heifer, at her first freshening at less than two years, will produce more than twice as much milk as the average mature cows in the dairy herds of the country, there is no doubt that it pays to have a purebred bull at the head of the herd.

President Frank O. Lowden, of the Holstein-Friesian Association, is the authority for the statement that purebred dairy animals never before sold at such low prices as at present, so the addition of a bull is not expensive.

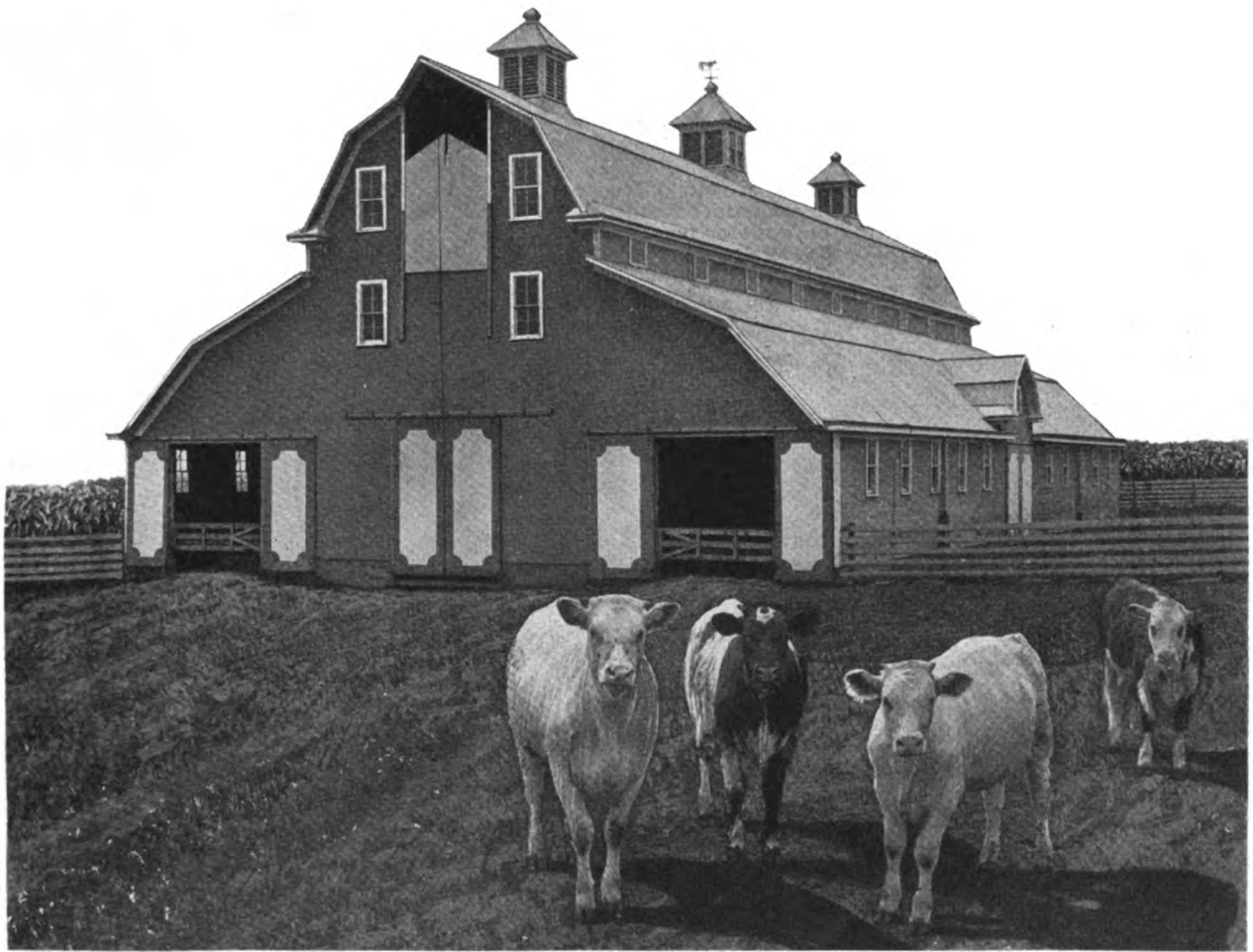
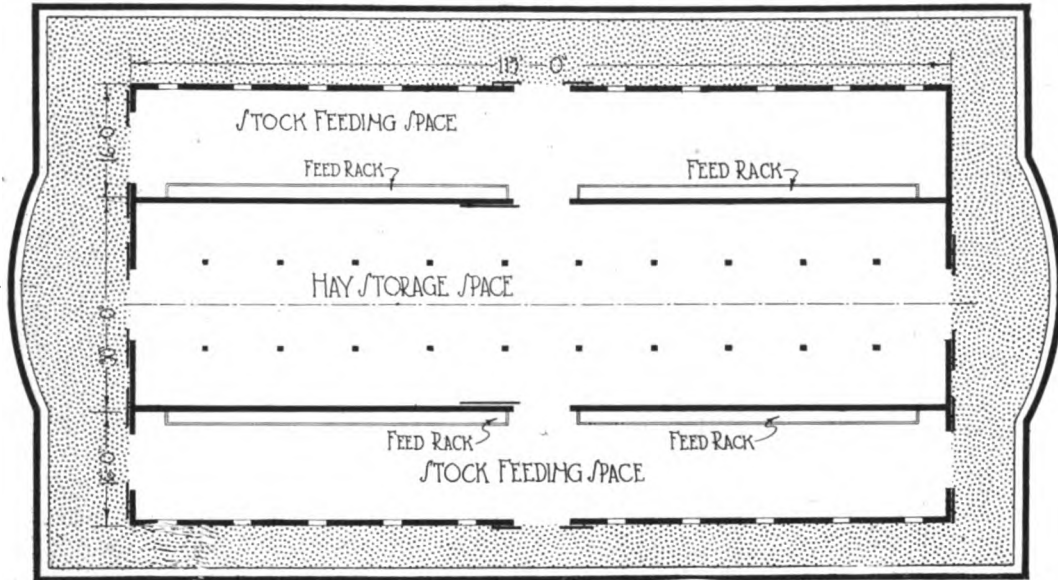


A CLOGGED sprayer hurts the human disposition more than it injures the insect. Is yours in shape?



"Creator," Chief Herd Sire at the Pabst Stock Farm, Oconomowoc, Wis. Ninety daughters of this bull are in the Pabst herd, and the first two to freshen have made notable milk and butter production records.

FARM MECHANICS BUILDING DESIGNS



BEEF CATTLE BARN. Cattle feeders use this type of barn to house the steers and breeding cattle. The ground floor is open, without stalls or pens, and the cattle are allowed to run in it at will, and have continual access to self-feeders in which the roughage is placed. Overhead is storage space for hay and roughage. Feed racks parallel the building on either side. The building is 62 feet wide and 115 long. Its exterior appearance is made attractive by the monitor type roof, which extends out so as to form two sheds, each 16 feet wide.

Marketing Via Good Roads

Year 'Round Highways and Motor Trucks Save Costs of Getting Farm Products to Buyers and Bring Better Prices

RECEIVING pens at the stockyards located in many cities present an unusual appearance these days. Motor trucks with stock bodies, each filled with livestock, are waiting their turns to unload. Some come from nearby points; others from as far away as 50 or 60 miles.

The combination of motor trucks and improved, hard surface roads has brought about this method of marketing livestock. Less handling, quicker arrival at the destination and smaller cost of transportation make this means of getting farm products to market more economical and as a result more profitable.

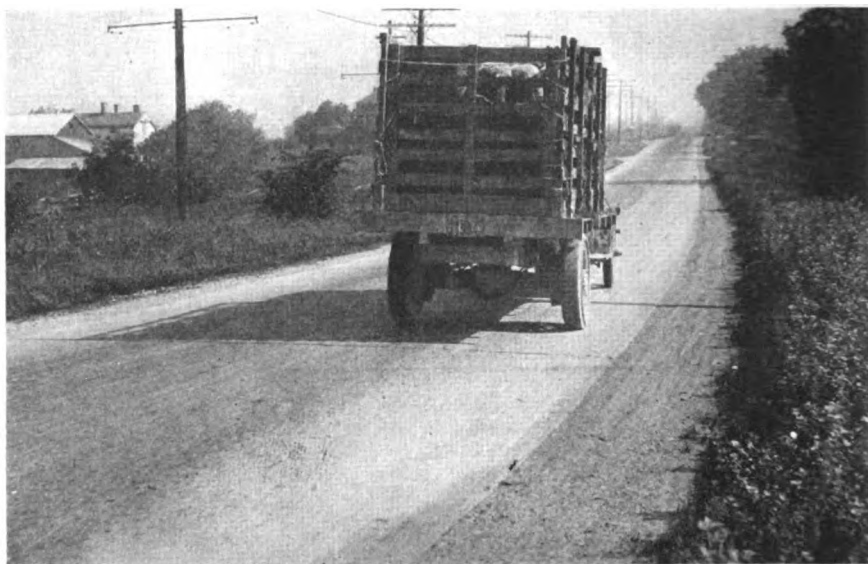
Good roads are a profitable investment. A highway that is usable the year around gives opportunity to transport livestock and grain to market when prices are most favorable; it permits travel at all times, something that every member of the family appreciates.

The greatest road-building activity in the history of the country is in progress this year. Federal aid, coupled with state funds raised by long term bond sales for this purpose; increased taxes on automobiles and trucks, and the proceeds of local bond issues are making it possible to push the program of hard

surface roads in rural districts.

Progressive farmers are back of this move to construct continuous systems of good roads. The value of roads that may be used summer and winter, fall and spring has been demonstrated.

The main arteries of travel thru the country are



A Country Road in Ohio Improved by a Concrete Surface, One of the "Permanent" Roads. This view shows a farmer taking his livestock to market by a motor truck, a method that cuts costs and increases profits.

being improved with what is termed "permanent" surfaces, such as concrete or asphalt. Roads that are subjected to less travel are being surfaced with a combination of asphaltum and gravel, commonly termed "rock asphalt." Dirt roads are treated with crude oil, which holds down the dust and unsurfaced roads are maintained by tractor or horse-drawn planers and scrapers. In fact, there is hardly a road in the country that is not getting some sort of treatment to make it more usable.

All of this road work is, or will be of great benefit to the people who live in the rural districts. They use the roads daily, both for pleasure and in their business. Distances to towns and the homes of neighbors have been immeasurably shortened by the automobile. Good markets have been brought closer by the motor truck. The so-called "isolation" of the farm is a thing of the past.

Another advantage of having roads that will attract traffic, espe-



A Tarvia Road on the Longview Farm, Near Kansas City. All of the roads on this place are improved, eliminating mud and heavy draft in the hauling about the farm.



A Speedy Motor Truck Carries the Grain from the Thresher Directly to the Storage Bins or to the Elevator. Trucks equipped with large pneumatic tires have no difficulty in negotiating a stubble field, and on good roads make the journey to market quickly.

cially automobiles from nearby towns and cities, is that it provides the farmer with a ready cash market for small crops such as fruits and vegetables. City dwellers prefer to get seasonable vegetables and fruits, either in small or large quantities, direct from the producer, rather than from the retailer. This method of disposing of farm, garden and orchard products cuts out the profit of the middleman, with the result that the profit goes to the producer without adding anything to the cost to the consumer. Eggs and poultry, also, find a ready market with the passersby.

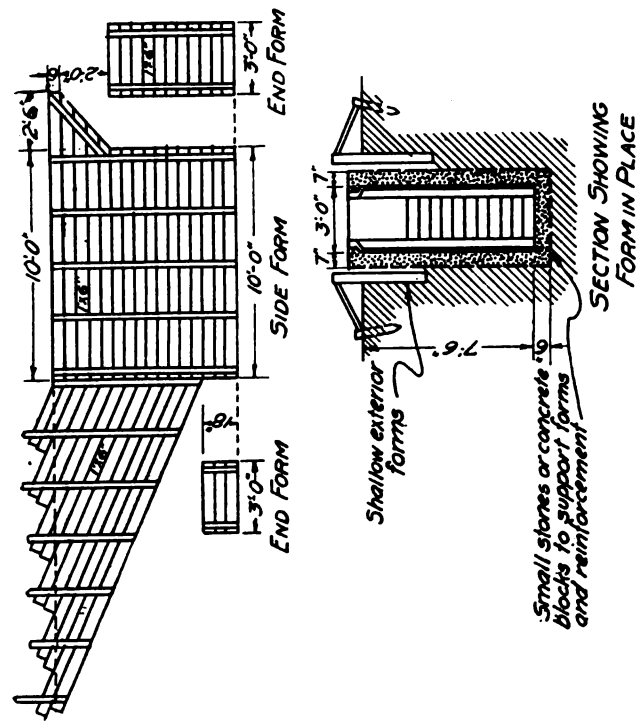
Only some of the more important of the advantages of good roads have been touched upon. But there is another point that is bound to be of great help

in supplying the agricultural districts with hard surface roads. That is the advantage of using motor trucks for short hauls of all kinds, hauls of manufactured products as well as farm products. Manufacturers have learned the lesson the same as farmers—that it is pure waste to load and unload their products when they may be conveyed within reasonable distances by motor truck, cutting out the railroads.

All of these factors are bringing good roads into the country rapidly. Also good roads are extending the service that motor trucks will render. The combination is working, one for the other, and to the benefit of the country.

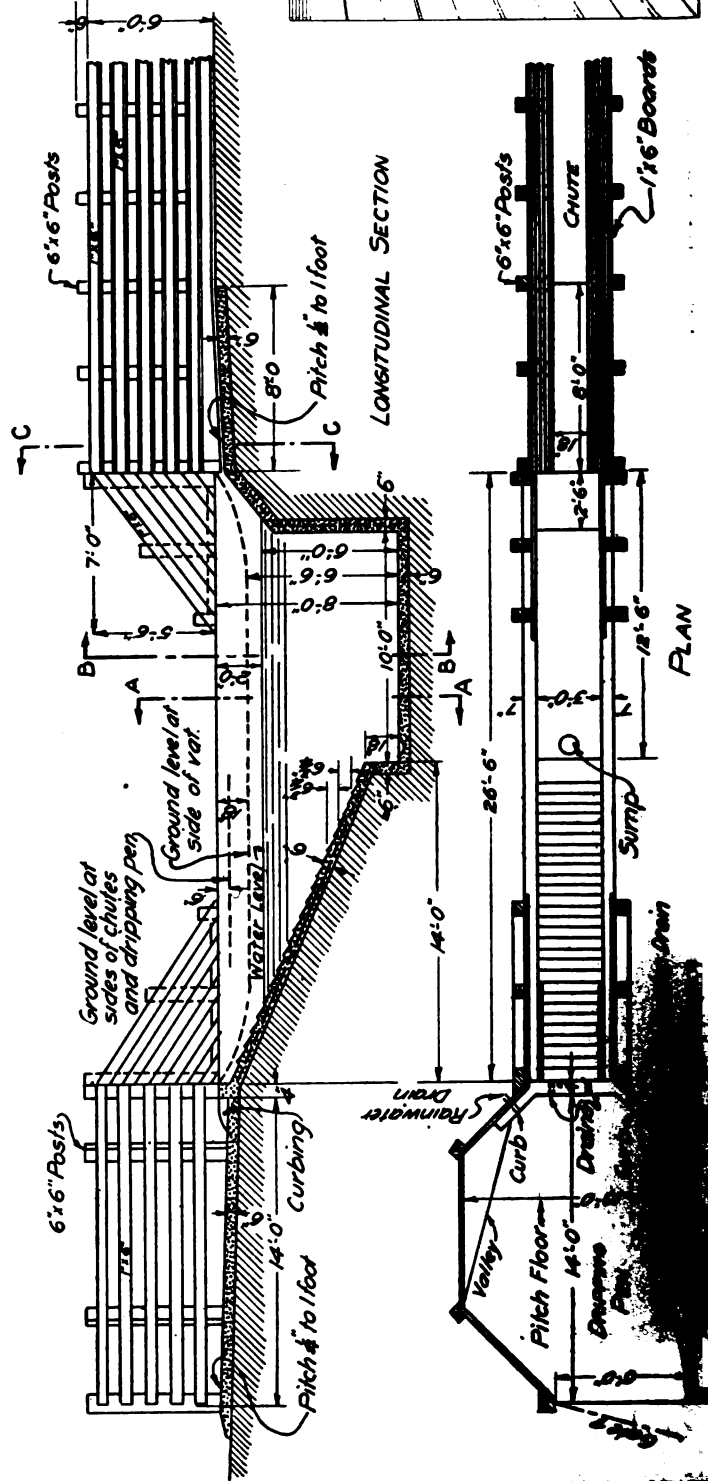
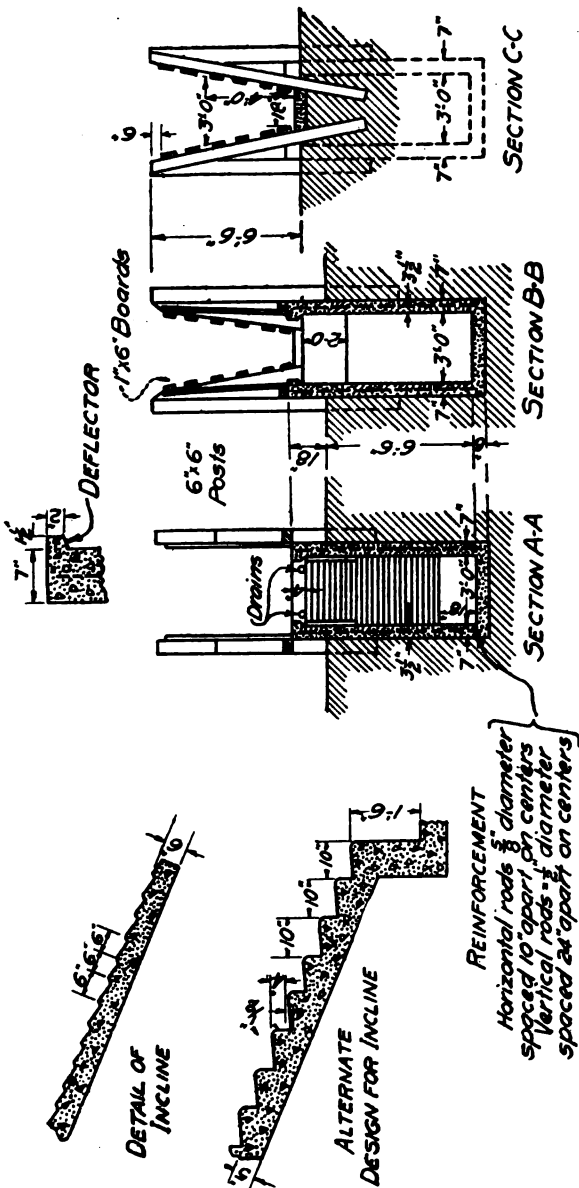
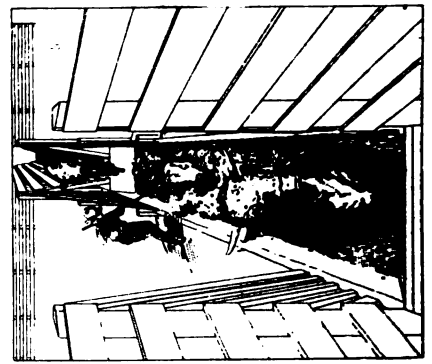


Here Is a Pretty Stretch of Road that Has been Treated with Crude Oil, Which Keeps Down the Dust and Makes it Less Susceptible to the Action of Water.

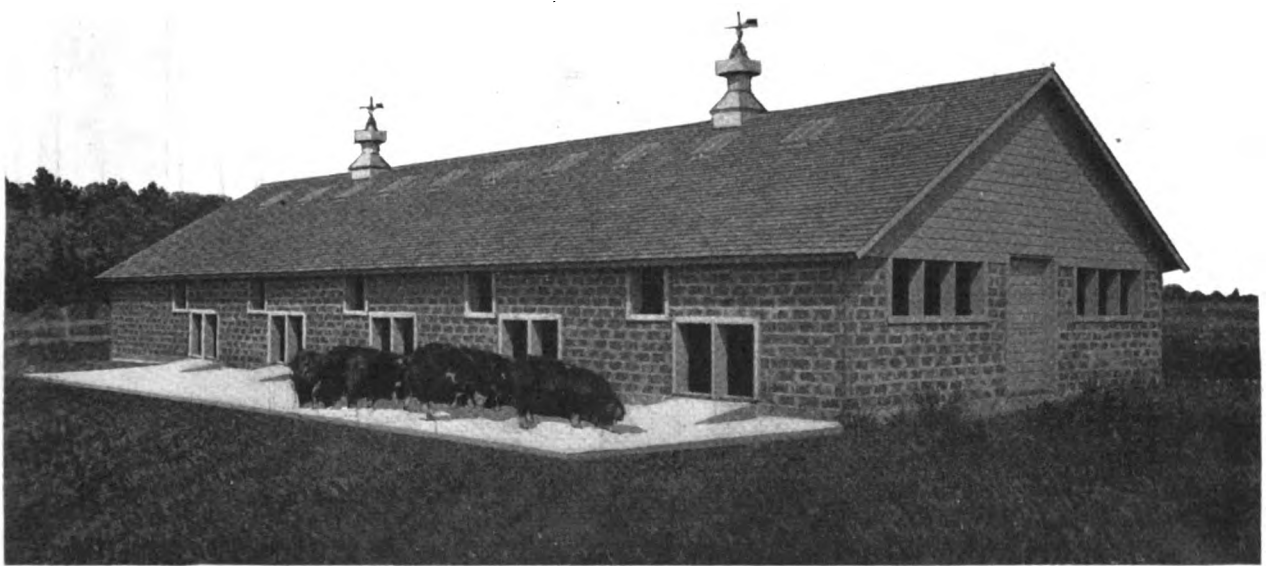
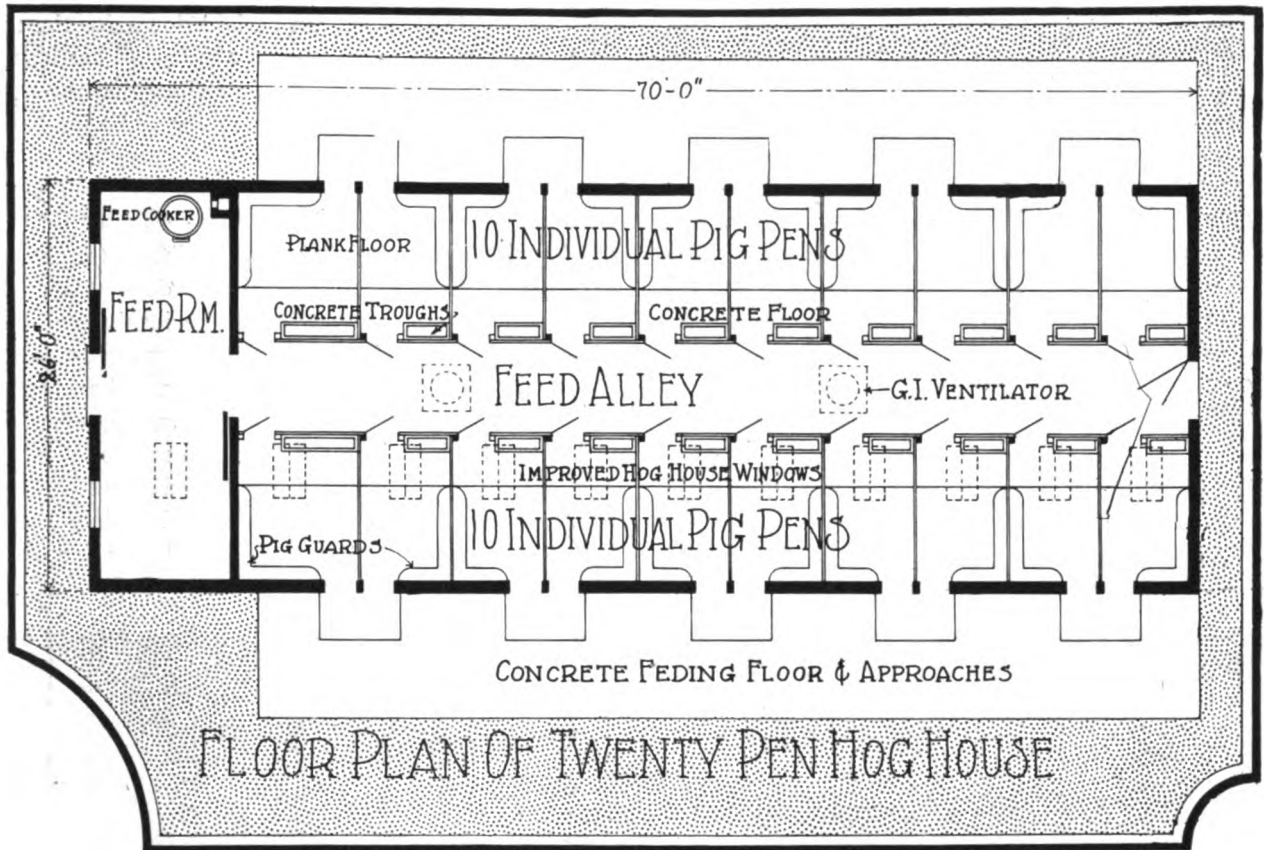


MATERIALS REQUIRED
 15 1/2 bbl. cement
 5 1/2 cu. yd. sand
 9 cu. yd. pebbles.
 600 lbs. steel rods.

Concrete mixture = 1:2 1/2:4



Cattle Dipping Vat, Giving Plan, Sections and Details of Construction of Concrete Structure for Dipping Cattle in Parasite-Killing Chemical Bath.



HOLLOW TILE HOG BARN. Many farmers who specialize in hogs prefer the gable roof hog barn to house the sows and their pigs in spring. This barn is built of hollow clay tile, and contains 20 farrowing pens. The sunshine that is needed for warmth in the late winter and early spring is admitted by specially designed roof windows, which also are used for ventilating the building. The barn is 26 feet wide and 70 feet long and has a feeding alley running thru the center. Outside on the south side of the building is a concrete feeding floor, connected with each pen by a door.

Making a Smooth, Pretty Lawn

Rolling Necessary to Keep Sod Compact and Grass Green During Dry Weather

By FLOYD H. KEISTER

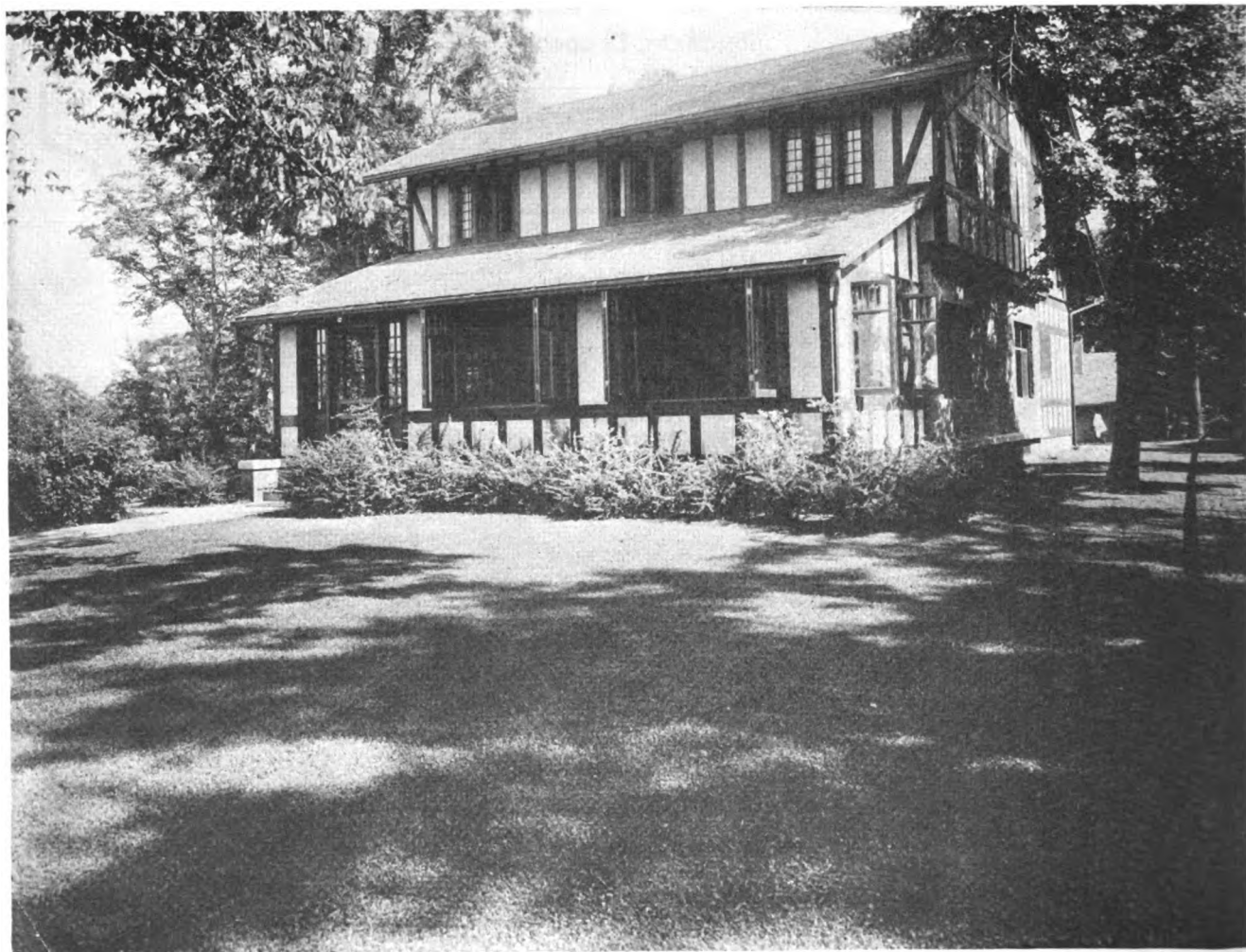
INQUIRIES are continually being made relative to the establishment of attractive lawns and the kinds of grasses and combination grass mixtures to use for this purpose. This article is prepared with the view of answering the questions most frequently asked.

Long experience has proven that it is decidedly best to exercise the greatest care in the sowing of lawn grass seed. As the maintenance of a lawn is no little expense, one must pay constant attention to it from the time of seeding and at no period of the year allow negligence to predominate on the part of the operator or owner. It is generally thought that when a lawn or park is seeded it will remain so indefinitely. Consequently, it is very desirable to conduct the preliminary operations in such a manner as to render future change unnecessary, for it is not an easy undertaking to remedy a defect of this nature in future years.

The exact date of seeding should, of course, be

governed by the season, soil, and climatic conditions. Hence no definite rules can be laid down for the time of sowing that would be applicable to all sections of the country. Whether spring or fall seeding should be practiced is a matter that varies for different localities. The least favorable time for starting a new lawn, however, is during the hot summer months, as droughts are more prevalent at that season of the year and weeds are more troublesome. When late fall sowing can possibly be advantageously done, there is a decided tendency to obviate these previously mentioned difficulties. Furthermore, the young grass can attain a fair growth before the inclement weather arrives. Weeds are not as troublesome during the late fall months and soil moisture is usually more abundant.

Much of the difficulty encountered in establishing lawns around dwellings is attributed mainly to the unproductive conditions of the soil. Quite frequently the infertility of surface soils is due to the fact that



A Smooth, Pretty Lawn Covering the Yard of the Farm Home Is a Distinct Asset and Can Be Made and Maintained with a Small Amount of Work. Frequent care accomplishes the result.

the subsoil which was removed in making excavation for the building was spread over the surface of the ground. Hence one can easily account for the poor soils in the vicinity of some buildings. The necessity of attaining a soil with a high state of cultivation is of superlative importance.

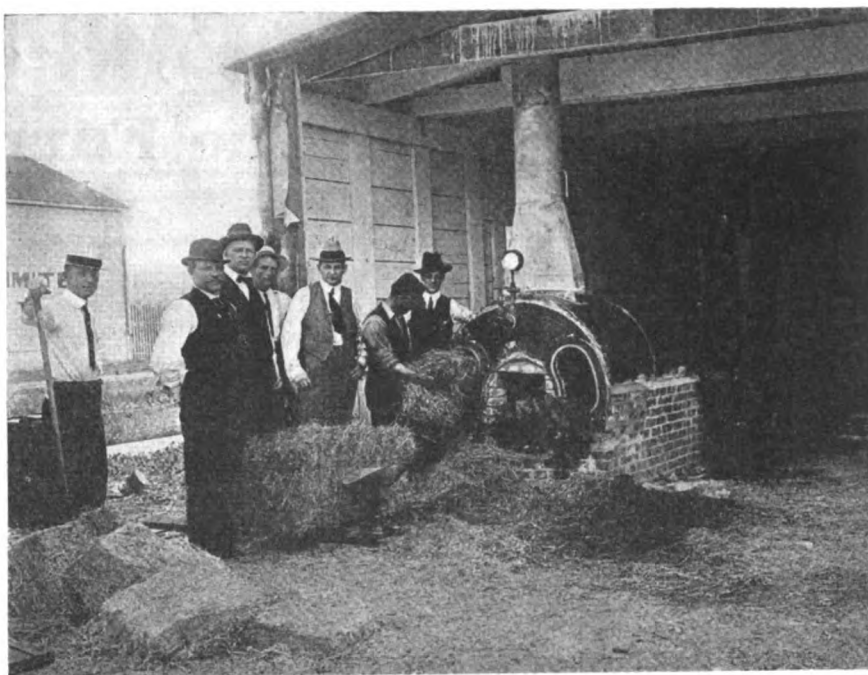
Most seedsmen carry a "lawn grass mixture" which is composed of several grasses selected purposely for the retention of a green lawn of vigorous growth thruout the year. These mixtures are particularly adapted to the immediate localities. They are blended in such a proportion that there is a well-balanced combination of grasses for producing a permanent, dense, compact sod, which retains its luxuriant appearance during the entire growing season. These lawn mixtures can usually be purchased from the seedsmen in any desired quantity. Preferably the nearest reputable seedman should be patronized in order to procure seeds which thrive best under the local climate and soil conditions.

The average person is at least partially familiar with the usual methods of procedure for sowing grass seed. Admitting this to be apparently true, the most important point which the writer wishes to emphasize is the necessity of rolling lawns. After growth has started, an occasional rolling of the sod with a medium weight roller will assist surprisingly in attaining a dense, compact sod which will remain green during dry weather. Too much importance cannot be attached to the necessity of rolling lawns during subsequent years, thereby maintaining a growth of fine and more uniform grass. The alternate freezing and thawing thruout the winter will ultimately bring about a heaving or rising of the sod. This action if allowed to continue indefinitely will inevitably be detrimental to the formation of a good sod. By carefully rolling the lawn frequently, the sod will be firmed and an even surface will be again restored. A packed soil of this nature is also more retentive of moisture during excessive droughts. Rolling once a year is not sufficient; no lawn can exhibit a high degree of attractiveness unless thoroly rolled several times a year.



Straw Gas a Cheap and Efficient Engine Fuel

INVESTIGATIONS conducted by the U. S. Department of Agriculture show that annually American farmers burn approximately 39,000,000 tons of straw and corn fodder which, were they utilized for heating, lighting and power purposes, would be equivalent



Experimenting with Straw as a Basis for the Manufacture of Gas.

lent in thermal value to 918,000,000 gallons of gasoline. At Arlington Farm, Virginia, Uncle Sam has provided a novel gas-producing plant where his representatives are converting waste straw into a fuel gas which gives a very satisfactory light when used in gas mantle lamps and which also produces good results when used in gas hot plates, stoves and heaters. Excellent results have also been obtained with the gas as a source of power for operating stationary internal combustion engines. Automobiles have been equipped with flexible bags containing about 300 cubic feet of straw gas—a quantity sufficient to run a car 15 miles—and operated on this unique fuel. The arrangement was similar to that followed in England during the war when motor buses were propelled by the use of coal gas.

Altho straw gas for automotive purposes presents pleasing possibilities, it will never be practical for such usage until some method of compressing and condensing the gas is perfected which will permit of carrying sufficient supplies of the material in a tank on the average motor car. One ton of sun-dried wheat straw yields approximately 10,000 cubic feet of purified gas, 600 to 650 pounds of carbon residue and about 10 gallons of tarry liquid. The Department of Agriculture intends to continue experimental tests with this material in order to determine the possible utilization and value of the by-products and whether the cost of producing the gas is low enough as to render its commercial production in rural communities where straw is abundant a profitable enterprise. In addition to straw and corn fodder, such waste materials as palmetto, corn cobs and cane trash—whose disposal often is an annoying problem at industrial factories—can also be used by the dry distillation method to produce a similar gas.—G. H. D.



How to Build a Substantial Farm Gate

PRACTICALLY every farm gate is permanent; that is, it is continued in place for many years. That's why it should be substantially built and of good materials. A poor gate is an aggravating thing. It sags, and the end drags on the ground. Time and temper are lost in operating it.

Illustrated herewith is a substantial double opening farm gate, designed for permanence. The materials specified all are strong, and they are put together securely and firmly, so that this gate will last for many years.

The posts on which the gates are hung are of seasoned cypress, 8 by 8 inches in size. The posts should be 12 feet long, and set 4 feet into the ground. The ends that are in the ground should be treated with three coats of wood preservative, which insures long life and protection from rot. The posts are guyed with 12-inch iron rods, bent at an angle and run thru the posts and bolted at the top. The bottom ends are bent in a hook-shape and are set into concrete anchors extending 3 feet into the ground, with a base 2 feet 6 inches and tapering so that it is 8 inches across the top above ground.

The double gates are 5 feet high and have a 16-foot span, each gate extending to the center a distance of 8 feet. The upright and diagonal braces are of 2 by 6-inch planks. The top pieces are also of 2 by 6-inch

planks and the bottom pieces of 2 by 8-inch planks. The boards between are 1 by 4s.

The three hinges with which each gate is hung are made of strap iron, 3 inches wide and $\frac{1}{2}$ -inch thick. They are hung with $\frac{1}{2}$ -inch bolts. The gate stop at the center is of concrete, set 2 feet 6 inches into the ground, with a top 8 inches wide protruding above the surface of the ground 10 inches.

By making a careful study of the drawing, on which the dimensions of the various materials are given, the farm carpenter can construct this double gate so that it will be correct in all details. It can be readily understood from the sizes of the lumber and the other materials that this gate is all that the word "substantial" implies.



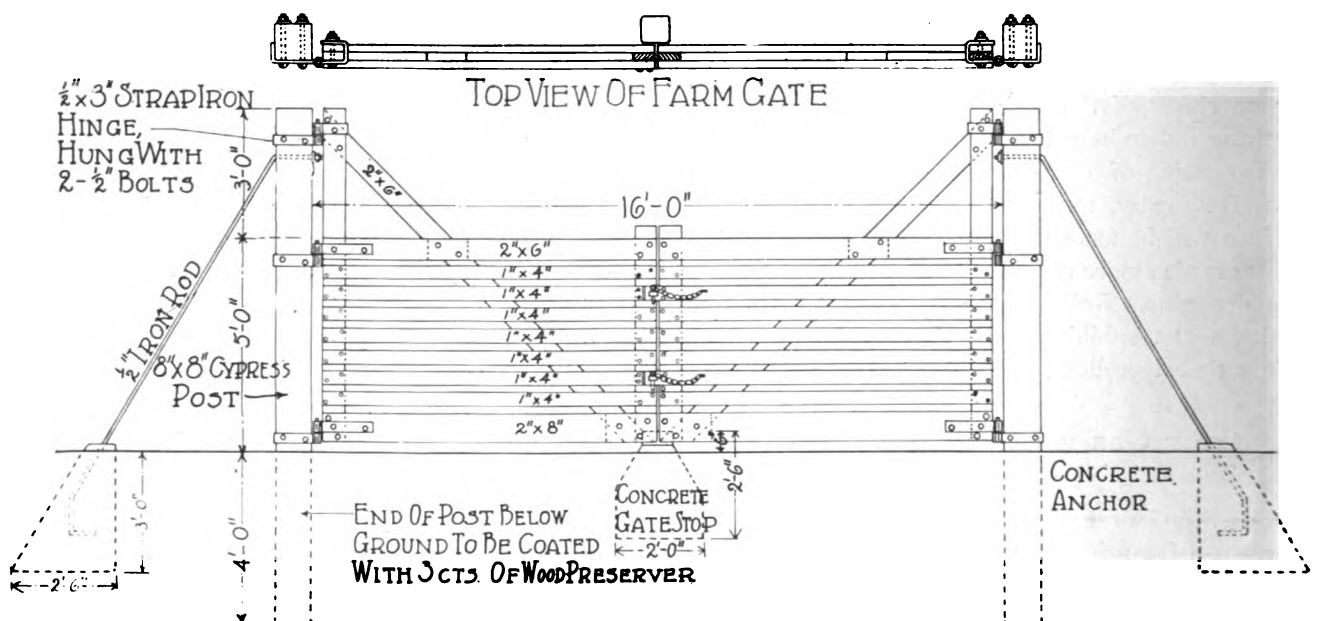
THERE'S good authority for the statement that George Washington owned America's first mule. The mule was a present to Washington from the King of Spain, and was named Royal Gift.



THE condition of the land is a lot more important than the condition of the moon around planting time.

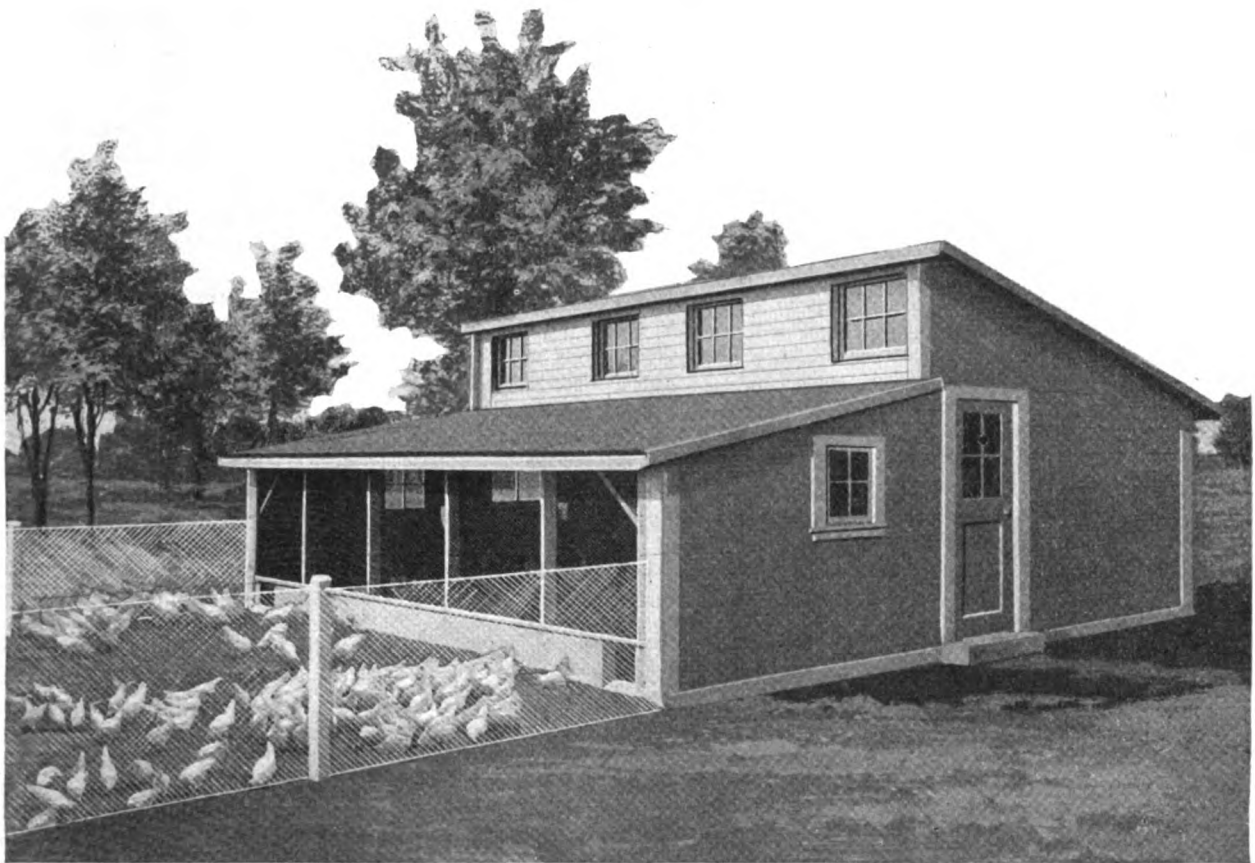
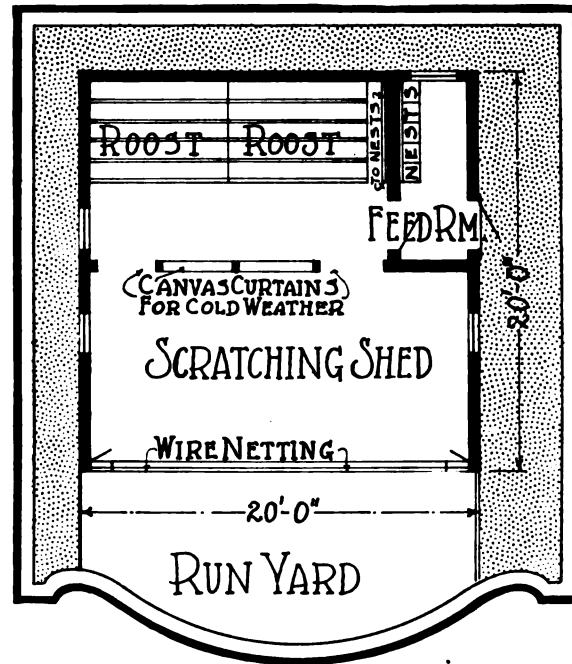


A POUND of lye to 40 gallons of water is a cheap and powerful disinfectant to use in the hog house and hen house.



Elevation of a Substantial Double Farm Gate, Showing the Sizes of Materials to Be Used. This type of gate is recommended where it will be permanent.

MECHANICAL BUILDING DESIGNS



OPEN-FRONT POULTRY HOUSE. Here is an open-front poultry house that will house a flock of more than 100 birds comfortably. The building is of the saw-tooth roof type, and is set facing the south so that the birds will be protected from the cold winds of winter and will get the benefit of the sun during the cold months. The house is 20 feet square and is of frame construction. The open front is covered with wire netting and burlap curtains are needed during the cold weather. These, of course, are rolled up when spring and summer arrive.

Turn On The Water

Several Different Types of Pressure Systems That Will Supply Running Water in the Farm Home

By NORMAN S. FISH

Extension Division, College of Agriculture, University of Wisconsin

RUNNING water in the farm home will afford as much or more comfort to the entire family than any other convenience which might be added. It will help to save the mother's time, health and strength; and to preserve the health of the family. The woman who can turn a tap in her kitchen, just where the water is needed, is relieved of carrying a large quantity of water. Moreover, running water for the farm home can be provided at a cost not above that of piping water to the barn for the convenience of the cattle.

All Need Fresh Water

The farm home should be supplied with water for drinking, for washing, and for the disposal of sewage. About 25 gallons a day for each person is the average requirement.

The supply should be fresh and free from contamination. While this is particularly true of drinking water, it is also true of water used for any other purpose. It is dangerous to use contaminated water even for cleaning purposes. See that the well or spring is where it will not receive the leaching from the manure pile or from any other source of pollution.

This supply should be abundant. A good water supply is essential to the indoor toilet and the sewage disposal

plant, both of which add so much to the health and happiness of farm life.

Pumps Need Power

Generally the water has to be pumped. The windmill supplies power cheaply and well, but unfortunately wind power has not been developed as much as it should

in diameter and 8 feet deep will hold 1,688 gallons. One could install such an outfit, not including fixtures, for about \$175. Either a windmill, a small gas engine, or an electric motor can be used to fill the tank. There is on the market an automatic float which will cause the motor to start and stop as the water

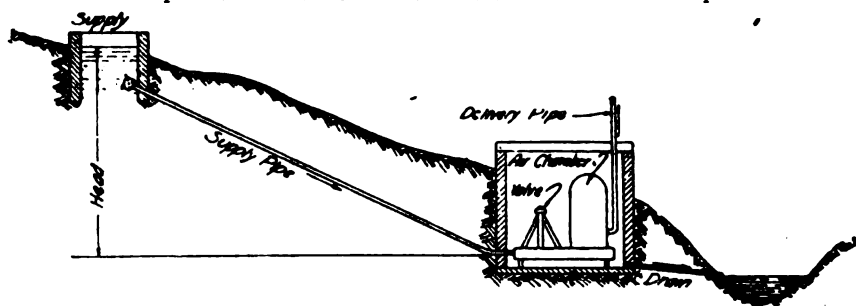


Fig. 2. Hydraulic Ram. The supply pipe may come from either a spring or an artesian well, either of which has force enough to lift the water to the required height.

be, or as much as it likely will be in years to come. The gas engine is a valuable aid to the windmill. So also is the electric motor, which is now winning well deserved popularity. For the sake of economy the same water system should supply water to both the barn and the house.

Gravity System Is Simple

The elevated or gravity system (Figure 1) generally is the cheapest to install and will answer every purpose in an ordinary home. It is only an elevated tank combined with a force pump. The water is sent to the tank by pump, and gravity furnishes the force for carrying it to various parts of the house. The tank may be placed in the attic of the house, for house use only, or in the barn for stable use or on a tower for both uses. The tank in the house is often limited in size, due to space or else the construction of the house may prohibit a heavy load.

Wood tanks are probably the best in that they do not sweat nor rust, are easier to erect, and are not so apt to freeze. Galvanized tanks also may be used, provided a "sweat pan" is used to care for "sweat" and overflow. Such a pan must have an outlet to the sink or to the outside.

One can figure the capacity of such a tank since one gallon of water occupies 231 cubic inches of space and weighs $8\frac{1}{3}$ pounds. To calculate the number of gallons the formula is: $D^2 \times .7854 \div 231 = \text{gallons}$. Thus a steel tank 6 feet

becomes lowered or raised.

The advantages of this system are:

1. Simple to install.
2. Simple to operate.

Disadvantages:

1. Difficult to secure sufficient elevation to give a pressure of over 20 pounds to the square inch.
2. Not sufficient for fire protection.
3. Nearly impossible to keep water fresh.
4. Danger of freezing.

Artesian Wells and Hydraulic Rams

If a spring or flowing well on the farm has sufficient flow, a hydraulic ram (Figure 2) can be used. The ram can be installed so that a small quantity of water may be raised to a considerable height by using a small fall in a stream. A fall of 5 feet will raise water 40 feet, provided the supply pipe is 40 feet long. Only about one-seventh to one-tenth of the total quantity delivered to the ram can be raised, but the ram will work night and day. Rams are made in various sizes and cost from \$25 to \$75. There are also manufactured double acting rams, whereby impure water can be utilized to deliver pure water. Rams are chiefly used to deliver water into a pneumatic tank where the lift is not too great.

Hydro-Pneumatic Pressure

In the air and water (or hydro-pneumatic) system (Figure 3), air and water are stored in an air-tight galvanized iron

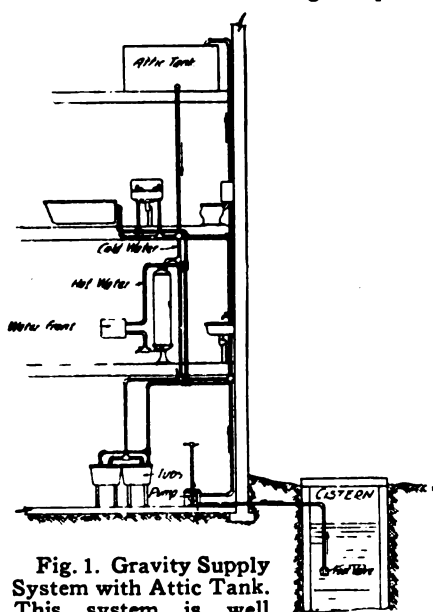


Fig. 1. Gravity Supply System with Attic Tank. This system is well adapted to laundry purposes, but water stored in an attic tank is not fresh enough for drinking. The hand pump is most common; and it is convenient to have an attic tank large enough to supply the toilet.

tank. This system overcomes the objections to the gravity system in that it can be placed in the basement of the house or below freezing level in the ground near the well.

The principle on which this system operates is, as water is pumped in at the bottom and rises, the air above is compressed. This pressure increases as water is forced in. When a faucet is opened the expansion of the air forces the water out. This system must be provided with a pump that will pump air and water separately or both at the same time. This is necessary for when air stands under pressure, it is absorbed by the water and drawn off when a faucet is open. Hence, fresh air must be supplied to take care of this loss.

The power required to run such an outfit is small. A two-horsepower engine or motor will furnish enough power or a windmill will afford an ample supply. There is on the market a windmill pump equipped with a hydraulic cylinder which will throw the mill into and out of gear automatically. Thus it can be operated in connection with the pressure tank.

There are on the market hydro-pneumatic systems which are equipped with pumps run by small electric motors which can be operated from either the city line or from the individual farm lighting plant. Little current is required by the motor and the system gives good satisfaction. The motor automatically starts and stops as the pressure falls or increases.

The working capacity of a tank in this system is one-third less than the total volume of the tank. The tank should be of sufficient size so as to necessitate pumping only two or three times a week.

A system with a 1,000-gallon tank, engine, pump and fittings will cost about \$500.

The advantages are:

1. No danger of freezing.

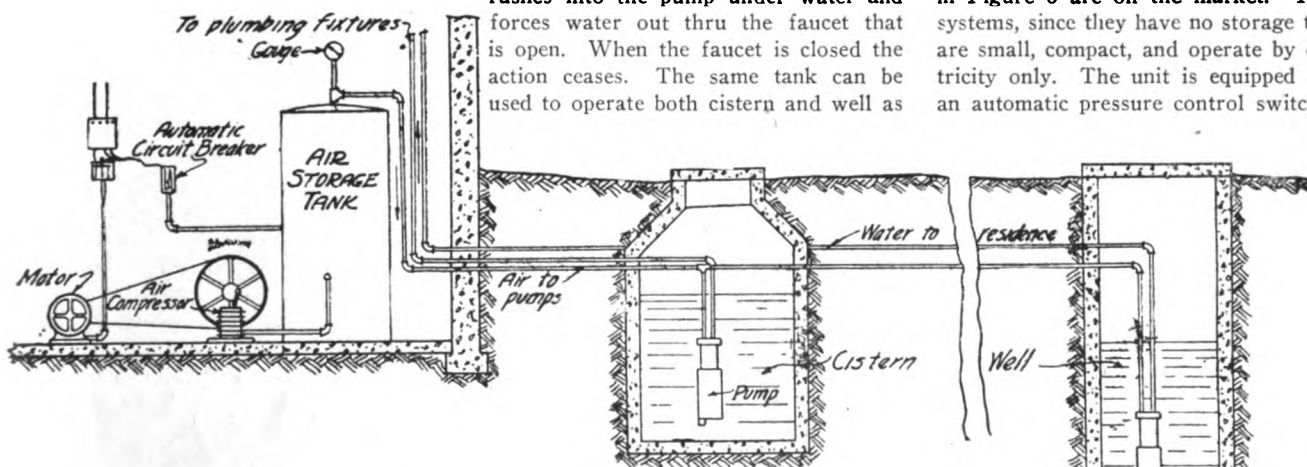


Fig. 3. The Hydro-Pneumatic Plant. The tank contains both water and air. The pressure of the air in the upper part of the tank is transmitted to the water in the lower part and forces it to rise to the plumbing fixtures when a faucet is opened.

2. Sufficient pressure for fire protection.

3. No expense of elevated tank.

The disadvantages are:

1. Water which is stored in a tank contains sediment which will deposit, hence it should be provided with a man-hole for cleaning.

2. Water may become flat or stale unless plenty of fresh air is provided as water is pumped into the tank.

shown in the figure.

The advantages of this system are:

1. One air storage tank will supply both hard and soft water by providing extra pump.

2. Fresh water at all times.

The disadvantages are:

1. Sand in water causes leaky valves.
2. Not suitable to raise water over 125 feet.

Automatic Pressure

The automatic system (Figure 5) is a small electrically operated unit. The motor automatically starts and stops as the pressure increases and decreases. Little current is required to operate the motor and the system gives entire satisfaction. Where electric current is not available, a gasoline engine driven pump can be used. This type of outfit, of course, will be automatic.

The tank is very small, thus insuring fresh water at all times. Some of the outfits have a special arrangement of piping whereby water can be pumped directly from the well without entering the tank.

Tankless Systems

Tankless automatic systems as shown in Figure 6 are on the market. These systems, since they have no storage tank, are small, compact, and operate by electricity only. The unit is equipped with an automatic pressure control switch so

Fig. 4. Fresh Hard and Soft Water Getting Pressure from the Same Tank. There is no water in the pressure tank. That contains only compressed air which forces the water from the well or cistern to the faucet. With electric power, automatic control of the pressure is possible.

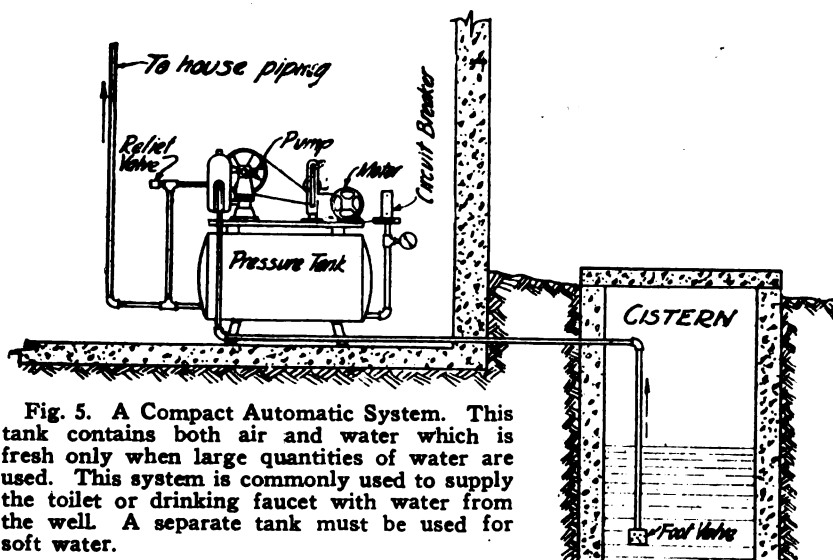


Fig. 5. A Compact Automatic System. This tank contains both air and water which is fresh only when large quantities of water are used. This system is commonly used to supply the toilet or drinking faucet with water from the well. A separate tank must be used for soft water.

that when a faucet is turned on the pressure drops and the pump starts immediately. On turning off the faucet the pressure rises and the motor stops.

The system requires little current and gives satisfaction. The outfit is simple and has few parts, hence there is little about it to get out of order.

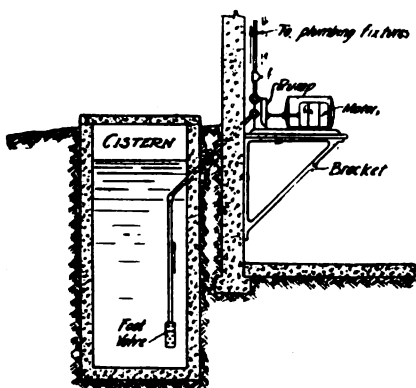


Fig. 6. Tankless System. An automatic tankless electric water system which operates by electricity only. It automatically furnishes fresh water at every faucet. It is especially adapted for shallow well pumping.

Sewage Disposal

A water supply both necessitates and aids a sanitary sewage disposal system.

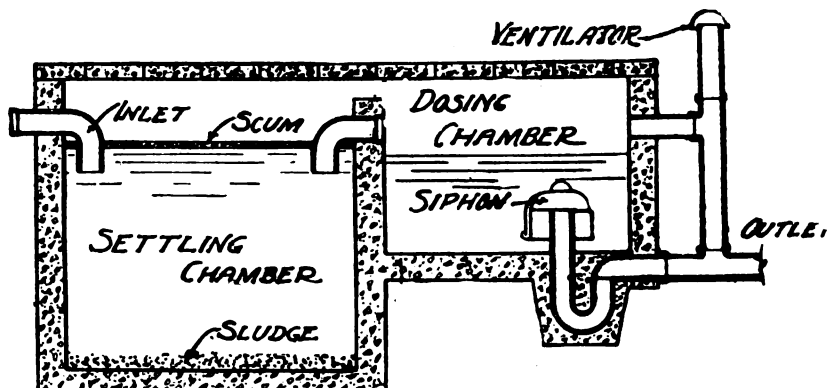


Fig. 7. Two Chamber Septic Tank. By means of the septic tank the disposal of sewage on the farm is a simple problem.

The simple, inexpensive, two-chamber septic tank (Figure 7) is most satisfactory. It can be located at any convenient place other than near a well. The tank may be covered completely so there need be no objection to having it in the yard.

The settling chamber receives the sewage and permits bacteria to reduce the solids to liquids and gases. Solids settle to the bottom to await such bacterial action. A scum forms on top immediately beneath which is comparatively clear water which flows into the dosing chamber. The siphon causes the dosing chamber to empty after the liquid content has reached a certain height, thus flushing the distributing system below the outlet. The distributing system consists of from 100 to 500 feet of drain tile laid, not deep, usually about 18 inches in the soil. In these tile the air permits aerobic bacteria to complete the purification of the water.

A single chamber septic tank has no dosing chamber. The liquid content runs directly and slowly from the settling chamber to the distributing system, without the intermittent and violent flushing that carries the water to the far end of the distributing system. This slow seepage sometimes causes water logging near

the tank instead of an even distribution over the entire system as is desirable.

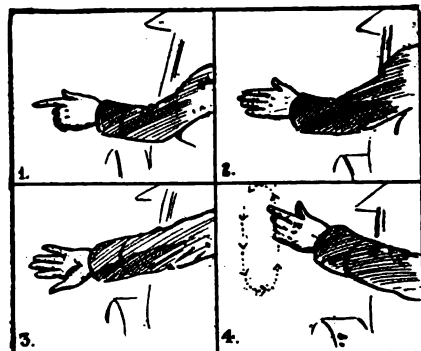


Avoid Auto Accidents

WITH more than 10,000,000 automobiles and trucks in use on the highways and in the city streets, driving, especially in the more congested sections, is precarious. Careful drivers suffer from the recklessness of others, while there are many, unfortunately, who have little consideration for their fellow autoists or pedestrians.

Most collisions are caused by mistakes in signals, or the failure to give signals when the car ahead makes a turn. Experienced drivers that are riding where the traffic is congested realize this and are careful about giving signals that will inform the driver of the car following of his intentions.

A set of signals for four moves which are thought to be exceptionally clear are shown in the accompanying illustration.



Proposed Standard Auto Signals.

No. 1 is to signal the intention of turning to the left. Extend the arm and point the first finger to the left.

No. 2 is to signal the intention to stop. Extend the arm with the back of the hand to the rear of the car.

No. 3 is to signal the intention of backing up. Extend the arm with the palm of the hand to the rear of the car, and motion in a backward direction.

No. 4 is to signal the intention of turning completely around. Circle the arm and hand three times forward to indicate a turn to be made to the right, and circle three times backward to indicate an intention to make the turn to the left.

By observing these signals and making them, drivers will do much toward avoiding accidents.



TRY putting soy beans with your silage corn. They'll just about double the protein content of the silage. Be sure to inoculate the soil if you want 'em to grow.

And Then the Sunshine Came

Clouds That Continually Hung Over the Knowlton Home Were Dispelled When Modern Conveniences Were Installed in the Farm Home

By F. J. ST. JOHN

MRS. GILBERT WALTON and her husband sat at breakfast in their home in Eastport. The lady opened the solitary letter which constituted the morning mail, sighing heavily meanwhile.

Her husband, across the table, raised his eyes questioningly from the double duty they were performing, keeping their owner in proper relation with his morning paper and he kept them raised, dutifully, until Mrs. Walton should explain the cause of her profound sigh.

"Just another letter from sister Alice. I suppose it's the same old story of her ills and ailments that she always writes. I'd like to get one letter from Alice Knowlton that didn't dwell entirely on her troubles—her aches and pains or the pains of the rest of the family, how tired she gets and how she envies her 'dear sister who has things so easy there in her fine home in Eastport.'"

Her husband eyed the letter doubtfully. "You haven't heard from her before, for some weeks. Maybe she'll have something cheerful to tell this time." He turned again to his paper and cereal, as his wife took out the folded sheets and began to read the closely written lines.

"Listen to this," she exclaimed a little later. "The strangest thing has happened. Alice has written it but it doesn't sound like her at all. They've been doing the old house over—they've put in a lot of modern improvements, electric lights, running water, motors and so on."

"Electric lights? How did they get electric lights away out there in the country?" questioned her husband.

"She doesn't say. She just grows enthusiastic over the wonderful new home they have made out of that big old farm house, and she insists that we come down to visit them and see the marvels they have accomplished." Mrs. Walton hurriedly skimmed on thru the letter to its close. "It must be quite a change for Alice and I should like to see it. We haven't been out to the farm for some time. What do you say?"

Mr. Walton agreed. It was a way he had, where Mrs. Walton's desires were concerned and so it came about that one day, shortly after the receipt of her sister's letter, Mrs. Walton and her husband went out in the country to the Knowlton home, about 50 miles from Eastport.

They left home in the cool of the summer morning, but it was midfore-

noon, and hot, when they reached Oakvale, the Knowlton homestead.

The heat and the dust were left behind, however, when they stepped on the big, shaded front porch and Alice Knowlton, cool, smiling and capable, took them in hand. Dusty wraps were quickly removed and they were guided up stairs, where there was a bathroom and running water.

Coming down presently they were led back to an end of the big porch where vines and hangings shut out the sunlight pleasantly and where they presently found themselves seated, with two or three of the Knowltons around a wicker table. Some one poured cold drinks from a frosted pitcher and cubes of ice tinkled against the sides of the glass.

"Ice!" exclaimed Gilbert Walton. "I didn't know you had an ice pond. Did you put up your own ice last winter?"

"No," Alice smiled over the rim of her glass, then set the glass down, still smiling. "I wrote you, didn't I, Isabel," to her sister, "about the changes we have been making here at the old home. Well, they all started with our buying an electric plant. We got this plant and it gives us all the electricity we need for a good many conveniences we are enjoy-



The Knowlton Home Was Pleasantly Located, but It Was Not Until Modern Conveniences Were Installed That the Family Really Enjoyed Life.



One of the Things the Electric Light Plant Made Possible Was an Iceless Refrigerator.

ing here now.

"One of these is an iceless refrigerator. It is run by electricity from our plant. It keeps the food in the food compartments always at a temperature a little above freezing and, in the freezing chamber, where the little ice cubes are frozen, the temperature runs from 16 to 24 degrees above zero.

"When it gets up to 24 degrees, then the electric motor starts and the cooling process goes on until the right temperature is reached; then it stops itself.

"We'll show it to you after a while. You'll want to see it, of course, altho

you will just think you are looking at a nice big refrigerator, the kind that the icemen fills."

"Well, that's fine," commented Gilbert Walton, "but what else does it do? Of course you didn't put in that electric plant just to run a refrigerator?"

Alice pointed to an electric light fixture against the porch ceiling and then at an electric fan which was buzzing on a stand a few feet away.

"We get light, electric light just as fine as you have in Eastport, Gilbert Walton," she nodded emphatically, "and electric power."

"How much light—or how many lights will your plant run?" This from Mrs. Walton.

"Oh," she thought for a moment, "I think we have 45 or 50 lights connected up about the place. That takes in lights for the house, porches, cellar, closets and attic, the barn and sheds, and lights for the driveway and barnyard.

"Of course, these are never all turned on at the same time unless we are having a party. Then we are apt to light up pretty thoroly all around. Ordinarily, of course, we have just the lights turned on we need here and there thruout the evening, probably a dozen or so.

"Most of our lights range from 25 to 50-watt size. That yard light, tho," pointing, "is a 75-watt size and it makes our dooryard as light as we need it. It is controlled from three points, too, from a switch by the kitchen door, from the barn and the garage."

Mrs. Walton commenced to laugh and at her sister's questioning look she hastened to explain.

"It seems so funny, Alice, to hear you running along, using electrical terms and everything. Do you have to see an electrician to have electricity in the country?"

"Oh, no. Of course an electrician did our wiring and the man who sold us the plant got us started, but Jimmy here takes all the care of the plant and I suppose any other twelve-year-old could do as well. I guess we all were interested in it because every operation where we could use electricity meant such an improvement over the old way and it has been lots of fun trying out the different ways where we could make it help us."

"It seems strange," mused Mrs. Walton. "I never thought of electricity as being so important a feature to us, in town."

"That's because we've always had it," interposed her husband, "and we just took its benefits without thinking, as a matter of course. Suppose they took our electricity away from us back home. It would be pretty hard to put in kerosene lamps or maybe gas lights, wouldn't it? And I suppose there wouldn't be any vacuum sweeper, or —" he hesitated and Alice broke in.

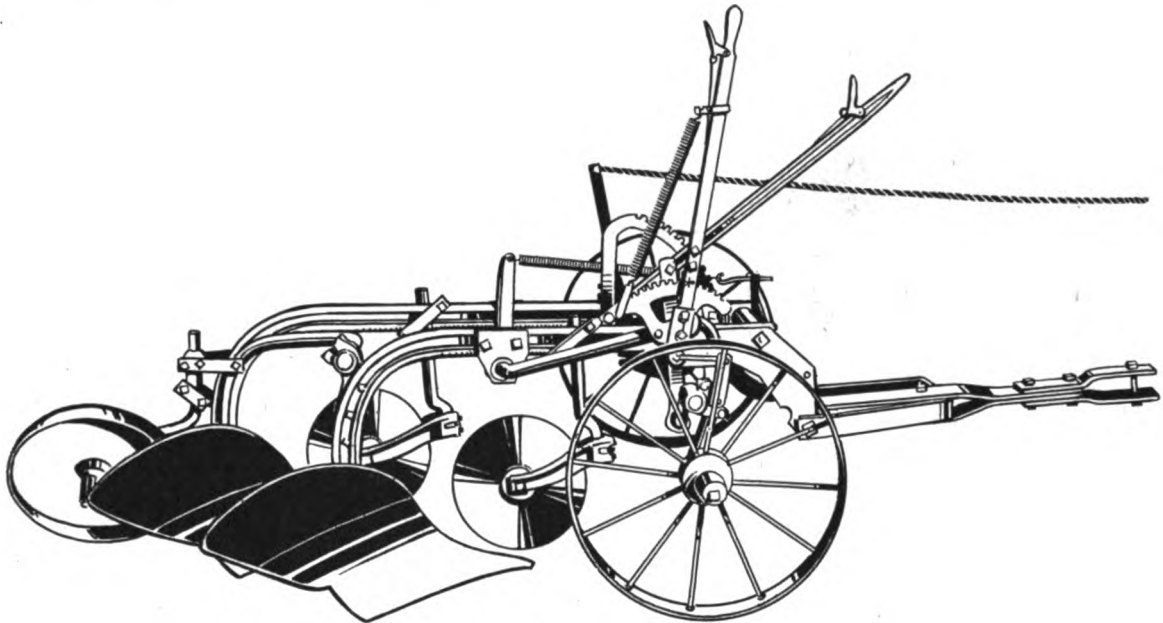
"It would mean more to us to give up electricity than it would for you. You get a few conveniences, lights, for instance, and you have a vacuum sweeper, perhaps an electric iron and electric fans. But here, those things are only a small part of our equipment. I've told you that we depend upon electricity for our refrigerating system. Electricity pumps our water. There's running water for the kitchen sink as well as that bathroom you saw, also for the laundry, and there are outside faucets for sprinkling yard and garden and there



Before the Water Pressure System Was Installed It Was Necessary to Carry the Water for the Work Stock.

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No. 12 PLOW FOR THE FORDSON



STRENGTH WITH LIGHT DRAFT

Features which make this plow stand out in a class by itself.

The width of cut is adjustable.

An emergency hand lift for use when the tractor is not in motion.

Flexible hitch insures even depth of plowing.

The rear wheel carries the weight and lightens draft.

The beams used in the LA CROSSE No. 12 are standard plow beams. We will guarantee them *not to spring, bend or break.*

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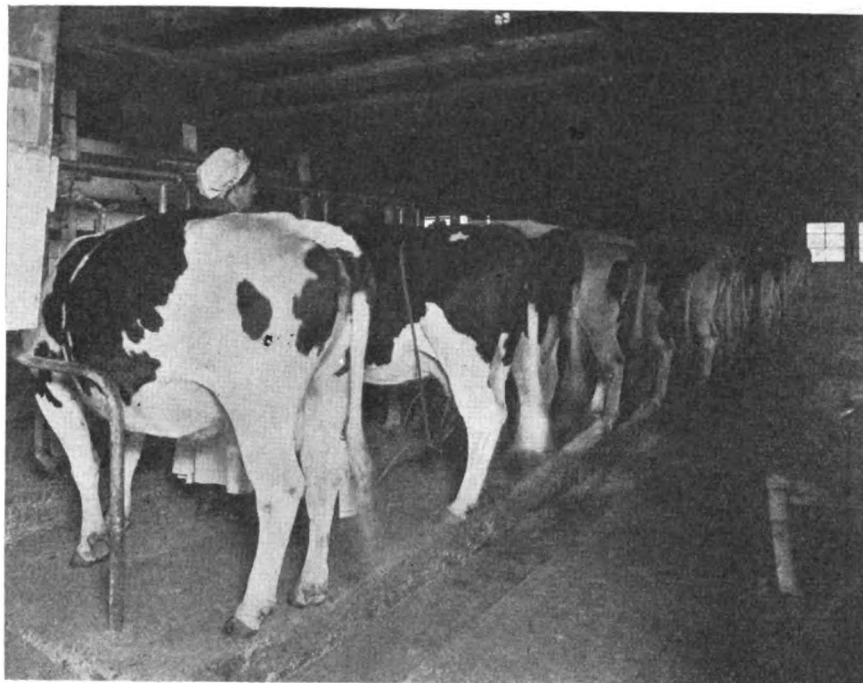
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Makers of Light Draft Plows

LA CROSSE, WISCONSIN





Electricity Also Made Possible an Electrically Driven Milking Machine.

are stock troughs at the barn with water pumped electrically. Nobody pumps by hand or carries water around here. There's pressure enough to afford good fire protection, so you see we're our own fire department.

"Then electricity runs the washing machine on washday. It also runs the churn two or three times a week. It—well, there isn't a machine about the

house and barn that we turn with a crank any more. The electric motor does it all. We keep only a few cows or we'd run a milking machine with electric motor. Our neighbors up the road here milk 20 or 30 cows twice a day, with a milking machine. They say one man does all the milking in one-half the time it used to take two men to milk the same cows.

Isabel Walton was watching her sister closely as she listened to the enthusiastic exposition of the subject of electricity at the Knowleton farm home and when she spoke this time she did not laugh.

"I've discovered something else that your electric plant has done for you, Alice. It's made a new woman out of you," she declared with sisterly frankness. "Why, I don't know when I've seen you grow pink-cheeked with enthusiasm over any subject. But now you're—why, you're actually growing young again."

"That's what John says," Alice laughed happily, "and if you

think I'm an enthusiastic crank on the subject of electricity, wait till you talk to that husband of mine. He's a real crank about it, particularly as to the way it has benefited me—having electricity to help out. I guess I was the most miserable woman in this country six months ago and the only thing that saved me was that I didn't realize just how miserable I was until we began to enjoy our modern comforts—and then it was too late to feel bad any more. But John—I'm afraid he realized it and I guess he was suffering along with me all the time—and worrying more than anyone ought to worry.

"At any rate," she concluded, "you'll see as big a change in John as you have in me. And the children enjoy the conveniences we have here now; the help is better satisfied; we find some new reason every day to be glad that we threw out the old way and put in electricity and its conveniences, and never a reason to regret it. But I see John coming now. It's almost time for dinner and he will want to tell you the rest."



Trim Trees Now

AT this time of the year the foliage is at its best. This makes it easy to get the best shape and form of the tree. It is best to examine the tree carefully to determine just the branch or limb to be removed. The larger limbs should be kept and the cross limbs and those that seem in the way should be removed. When limbs of trees are removed, it is necessary to make the cut next to the body of the tree. This will give easy access for the return flow of sap to cover the wound. Never leave a stump of a limb.

Fruit trees and shade trees require about the same care in trimming and the finer limbs and water sprouts from the inside should be removed. This opens up the inside of the tree, thus giving free access of sun and air.

Trees are valuable and if any pruning is necessary—do it now. One of the safe rules is to remove dead branches and leave the tree natural.



Excels Them All

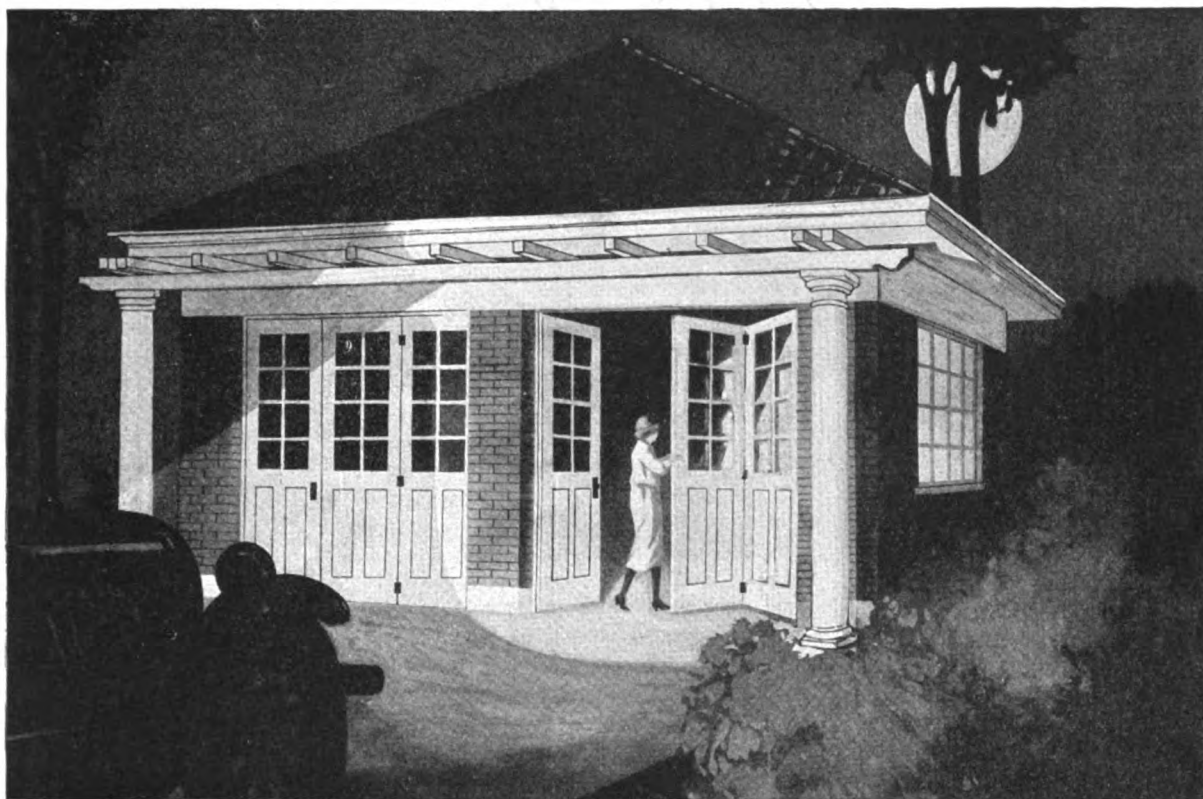
I JUST wanted to tell you how much I enjoy FARM MECHANICS. I think it is the best magazine I know of. I bought some pure-bred Duroc-Jersey hogs this fall and am now going to try my luck with pure-breds out here. They are the first in this part of the country.—M. J. VICK, Rock Spring, Mont.



REMEMBER that farm animals as well as humans appreciate plenty of clean, cold water on a hot summer day.



Tanks Supplied by Pressure Insured a Continuous Supply of Water in the House and at the Barn.



In the Spotlight Although widely imitated, *Slidetite* Garage Door Hardware continues to hold its place in the spotlight of public approval. Various exclusive features, together with the ability to withstand long, hard usage, account for its popularity. Before erecting a garage of any size, it will pay you to investigate the merits of *Slidetite*. No other garage door hardware can give you such lasting satisfaction.

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blow shut, thereby harming either automobile or person.

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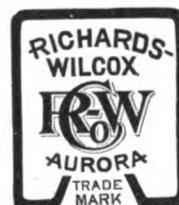
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Your local hardware or lumber dealer should be able to supply you. If not, "*Slidetite*" may be obtained from our nearest branch.

Sweet Potato Storage Houses

Southern Farmers Advised to Use Tobacco Barns for Sweet Potatoes, as Needs Are About the Same

By FRED E. MILLER

THE old practice of storing sweet potatoes in pits, banks, or cellars built underground is very unsatisfactory, as 40 per cent or more of such roots may be lost from decay. Those which do not decay are, as a rule, of poor quality and do not keep well after their removal. Furthermore, it is not economical to store sweet potatoes under such conditions, as it requires more labor to build banks annually than is necessary to store the potatoes in a properly constructed storage house. The saving in labor would in a few years offset the cost of remodeling the tobacco barn. Since it is not practicable to open such storage pits in cold or rainy weather it is oftentimes impossible to avail of the best opportunity for disposing of the crop.

The remedy for this condition of affairs is to put the potatoes in a storage house where they can be properly cured and cared for during the storage season and taken out at any time without fear of subjecting those remaining to unfavorable weather conditions.

To keep sweet potatoes in good condition they must be (1) well matured before digging, (2) carefully handled, (3) well dried or cured after being put in the house, and (4) kept at a uniform temperature after they are cured.

The construction of a flue-heated tobacco barn is similar in principle to that of a sweet-potato storage house. The walls of both houses are double, or airtight, and so constructed that the influence of the outside temperature can be reduced to a minimum. Both have provision for roof and floor ventilation and are equipped with heating devices.

Tobacco barns are usually built in two sizes, 16 by 16 feet, with a wall 16 feet high, or 20 by 20 feet, with a wall 20 feet high. The plan of construction is shown in the drawing. In many cases the log barn is used, where logs or poles are notched at the ends in old log-cabin fashion and made tight by "chinking" or "daubing" with mud, or better, with plaster made in the usual manner for plastering houses. Either the frame or log barn can be used for sweet-potato storage, as both types of houses are heated by a furnace with 12 or 14-inch flues extending into the house. This method of heating can be used satisfactorily for curing sweet potatoes; also during the storage period when it is advisable to raise the inside temperature.

After the tobacco-curing period is over it is well to get the barn in shape for storing sweet potatoes, in order that everything will be in readiness at the time of the sweet-potato harvest. In the first place, the furnace and flues should be

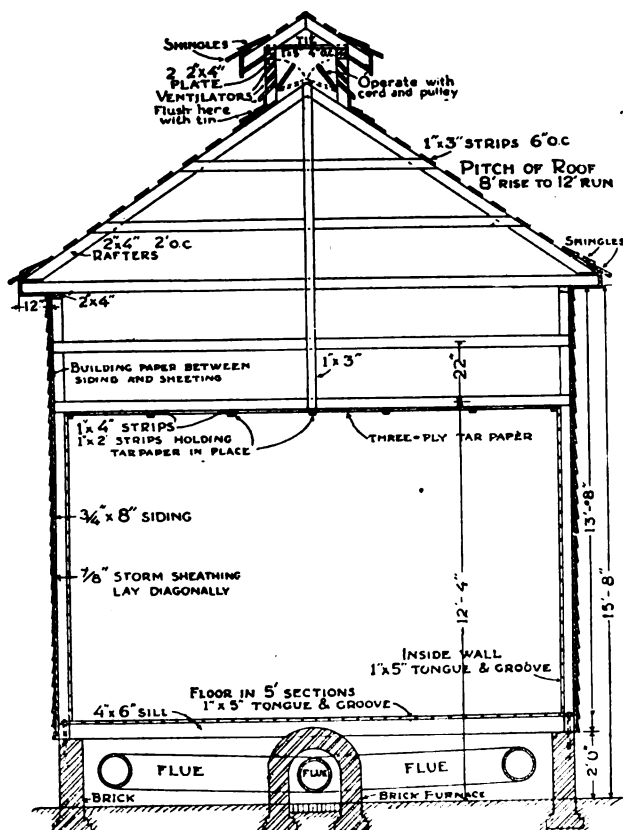
gone over and made tight. Remove the tier poles to the height of 10 feet from the top of the foundation. These poles should be laid aside until the house is again used for curing tobacco.

With a frame barn, if the inside wall is not present, seal over the studding with matched lumber from the foundation to the top of the storage wall or first row of tier poles. This inside wall should fit tight at the foundation. At the top the openings between the studding and the outer and inner walls should be covered, in order to prevent circulation between the walls and to make this as nearly as possible a dead-air space. Many tobacco barns have this inner wall of matched lumber, which greatly reduces the cost and the time required for converting the barn the first year. It is not necessary to seal the inside of a log barn but the walls should be gone over to make sure that the mud or plaster between the logs is tight and secure.

Two piers of the height of the foundation are evenly spaced on a center line on the inside. One girder 4 by 6 inches by 16 feet rests at each end of the foundation wall and is supported in the center by two piers. Seven joists, 2 by 8 inches by 16 feet, placed 2 feet apart at right angles to the girder, rest on the foundation at the ends and the girder in the center. The floor is constructed of 1 by 5-inch tongue-and-groove flooring and is made in 4 by 14-foot sections, so spaced that it fits tight over the joists. The last sections put in should be jammed down in order to make a tight floor. No parts of the floor, joist, or girders are nailed, but are simply made to fit evenly so as to be removed easily. It may be necessary, however, to hold the girder and joist in place by tacking the ends.

Nail 1 by 4-inch strips on the under side of the tier poles, spaced 34 inches apart on center. Use 3-ply tar paper and tack to the under side of the strips, holding it in place by half-inch by 2-inch strips. Use a strip for fastening the ceiling tar paper against the side walls in order to make them tight.

If the tobacco barn is not already fitted with wall ventilators make six



Cross-Section, Showing the Construction of a Ventilated Barn for Sweet Potato Storage.



POWER FOR BELT AND DRAWBAR

International 8-16 now \$670

The International 8-16 Tractor is a combination of sensible design and high-grade construction, with many points of superiority. It has a four-cylinder, valve-in-head engine with all working parts enclosed; throttle governor; removable cylinder sleeves; high tension magneto; and kerosene carburetor.

Its light weight, snug compactness, ease of control, generous reserve power, eco-

nomical operation and general fitness for diversified service has made it highly popular everywhere. Its present price includes all necessary equipment—platform, fenders, throttle governor, adjustable drawbar, belt pulley, angle lugs, brakes, etc. In case you require larger power, note that this same equipment is included also with the Titan 10-20 Tractor at its new \$700 price.

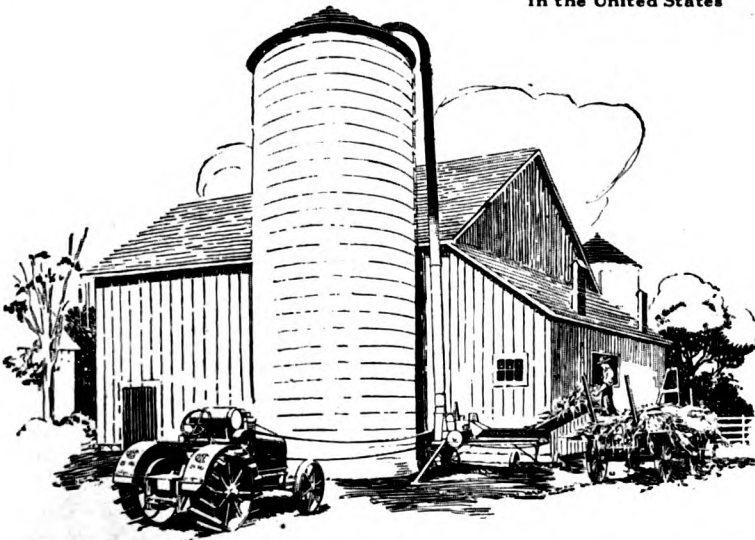
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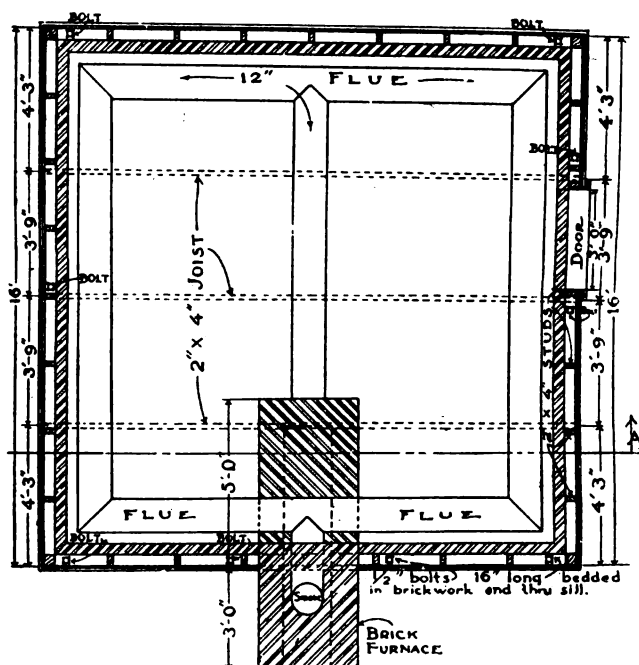
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Be guided by the judgment of thousands of International owners. For belt work and for drawbar work the year around, follow their advice. See the McCormick-Deering dealer.



Plan of Sweet Potato Storage House.

openings, each about 18 by 24 inches, three on either side between the temporary floor and the ground, and provide these with sash or doors.

Cut a 12 by 12-inch ventilator in each corner of the floor and one in the center. Provide tight-fitting covers for them. Cut two 12 by 12-inch ventilators in the tar-paper ceiling; build a frame around them in order to provide a cover. Space the ceiling ventilators 6 feet from the side wall on a center line.

The door should be made tight, doubled if necessary, and also padded.

It is advisable to cut a small window with a tight-fitting shutter above the door in order to furnish light for working inside during cold weather. Great care must be exercised in making all openings tight, as success depends on tight walls in order to control the inside temperature.



Hogs Don't Sweat—Must Have Shade

HOGS are non-sweating animals and unless they are provided with protection in the form of shade or water for wallowing purposes, they suffer heavily from heat during the hot summer months. Many farmers are using concrete wallowing tanks successfully in keeping their animals cool, while others have found shade to be the most practical form of relief on their farms. In either case, it is necessary to provide the animals with plenty of clear drinking water in order to keep down the suffering from heat most effectively.

If there are no trees in the pasture

rear has given satisfactory results on the Kentucky Agricultural Experiment Station farm. No sides are put on the building, as free circulation of air is desired.

When concrete wallowing tanks are used in keeping hogs cool, a small amount of oil should be placed in the water to keep the animals free from lice. Care should be taken to see that wallows of all kinds are kept clean.



“Riding the Clutch”

ONE of the most common diseases with which many car owners are afflicted is “clutch riding.” It exists in more or less aggravated form in an untold number of motorists. Automobile manufacturers and the automotive press have used columns of space and a variety of methods to eliminate



“Riding the Clutch” Is a Bad Habit Many Auto Drivers Have.

to provide shade, a good shelter from the sun may be constructed by setting short posts in the ground and building a roof of light boards over these. The boards should be nailed down to prevent their being blown away by the wind. If the owner wishes the building for permanent shade, rafters can be set up and the structure made more complete.

A shed-roof type of building 14 feet long and 5½ feet high in front, sloping down to 3½ feet high in the

the disease, but it still exists to a large extent.

If a poll of service men thruout the country were taken, undoubtedly it would develop that a very large proportion of so-called clutch troubles are based entirely upon the car owners' habit of “riding the clutch.” Too much emphasis cannot be given the fact that the clutch pedal was never intended as a foot rest. If it were not for the necessity of providing for a change of gears, automobiles would not be equipped with either clutch pedal or clutch. The sole function of



The Proper Position of the Feet, Off the Clutch Pedal.

the clutch pedal is to provide a means for engaging or releasing the clutch when shifting gears and it should not be used for any other purpose.

The car owner who persists in keeping his foot on the pedal at all times while driving is just storing up possibilities of trouble. Two major difficulties—a noisy clutch bearing and a slipping clutch—are likely to result from pedal riding. The weight of the foot on the pedal will press the clutch yoke against the bearing, causing the bearing to heat and to lose its lubrication. The loss of lubrication cannot fail to result in a disagreeable clutch noise.



Practical Magazine

I CANNOT think of anything to improve FARM MECHANICS. It is the most practical publication for the farmer I know of. It will do wonders to keep the farm boys interested in the farm. I speak from experience.—I. P. Woods, Hillsboro, Ohio.



A NY dairy calf that's a year old has cost its owner at least \$50. Some folks have scrubs for their money; others raise purebreds and have something worth keeping.



The Roof of the Future

*Your Opportunity in MULE-HIDE
COR-DU-ROY Panel Strip Shingle*

Here's the fastest selling, greatest friend-making asphalt shingle ever offered to the roofing trade. It's a MULE-HIDE quality shingle clear through.

With COR-DU-ROY Panel Strip you can offer your trade distinctive individuality—a two-tone panel effect, unlike anything ever before offered in an asphalt shingle—and the heaviest and toughest strip shingle made. This has a double significance when you consider that all of this weight is quality material. Not one thing has gone into the construction of this shingle to make for greater weight unless it would add something to its toughness and durability. The elimination of the slot means there is no danger of warping or curling and insures a shingle which will actually lay as "flat as a board" in any weather.

NOW! Dealers everywhere enjoying the exclusive MULE-HIDE Sales Franchise are reaping a harvest of healthy, better business with the assurance that every customer made through the sale of COR-DU-ROY Panel Strip is completely satisfied.

In Chicago, Indianapolis, Cleveland, Columbus, Des Moines, and other large cities, the COR-DU-ROY Panel Strip has already proven itself a fast winning favorite with architects, builders and more particularly the home owner.

Dealers!

Wire or write for sample
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COR-DU-ROY PANEL STRIP

"NOT A KICK IN A MILLION FEET"

COR-DU-ROY Panel Strip is the crowning achievement of a series of MULE-HIDE successes—It is the novel combination of the famous COR-DU-ROY alternated with the plain MULE-HIDE asphalt shingle and built into a solid unit of four.

COR-DU-ROY Panel Strip means a roof of conservative beauty and lasting service and gives to the home an atmosphere of refinement and dignity. It offers a relief from the usual dull and lifeless roof coverings which so often mar homes that are otherwise beautiful—and yet Panel Strip achieves its unusual and delightful two-tone appearance, not through any aggressive mixture of colors that may tend toward the gaudy or superficial expression so often mistaken for true beauty.

COR-DU-ROY Panel Strip is made in the standard size, 10 in. by 32 in. weighing 230 pounds to the square, and in the super size, 12½ in. by 32 in. with a weight of 285 pounds to the square. In each square there are 112 shingles, sufficient to lay 4 in. to the weather. The 10-in. shingle gives double thickness and a partial third over the entire roof, while the 12½ shingle means a triple thickness and a partial fourth all over.

Both the Super and the Standard sizes are made of the same all-rag felt base, thoroughly saturated and coated with a genuine Mexican Asphalt from which all of the lighter oils have been removed, and covered with a natural color slate in either red, green or the new and popular blue-black shade.

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(12½"x32") Pat. applied for

Standard Panel Strip Shingle
(10"x32") Pat. applied for

Clean Wheat at Thresher

Increase in Dockage in Spring Wheat Causes Department of Agriculture to Devise Means of Reducing Loss

By ROBERT H. BLACK

THE Minnesota grain-inspection records for the past 18 years show that the percentage of dockage in wheat arriving at terminal markets in Minnesota has been increasing. The average dockage for 1903 was 2.2 per cent; the average dockage for the six-year period ending 1914 was 2.9 per cent; and for the six-year period ending 1920 was 4 per cent, while for the 1920 crop of wheat alone marketed up to January 1, 1921, the average dockage was 5.1 per cent. This means that on this basis the 1921 crop of spring wheat contains over 10,000,000 bushels of 60 pounds each of dockage.

Some of the material removed as dockage has a certain feed value, while other constituent parts of the dockage not only have no feeding value but are actually harmful as a feed. The expense of removing the dockage at the elevators and flour mills at the present time practically offsets this commercial value, with the result that the farmers seldom receive anything for the dockage when they sell grain at their local elevators.

Dockage gets into the wheat from various sources. One of the principal sources is the sowing of foul wheat just as it comes from the threshing machine without any further cleaning. In order to determine just how much foul matter was being sown with the wheat,

as 18 per cent of weed seeds. In terms of numbers of weed seeds sown the range was from 2,000 to 489,000 seeds per acre, each of which was probably



1. Sample of spring wheat, as delivered from a threshing machine, containing a heavy admixture of dockage, mostly wild oats, which illustrates the desirability of recleaning wheat at time of threshing.

capable of developing a strong weed plant. Wild oats, wild buckwheat, vetch, and kinghead, in the order named, were the four weeds most common in the seed wheat. If the farmers insist upon sowing the seed as it comes from the threshers without further cleaning, then the threshers should clean the wheat much better than is now being done.

The weed seeds that are in the threshed wheat must be removed before the wheat is ground into flour. Removing these seeds at the flour mills is not only expensive but is also economically wasteful for many reasons, one of which is that the repeated handling of wheat thru the elevators and during shipments breaks up many of the wheat kernels. These small pieces of cracked wheat, which would make good flour if they could be saved, are removed with the weed seeds when the wheat is cleaned in the flour mill, because the small pieces of cracked wheat are approximately the same size as the weed seeds and are removed in the cleaning operation.

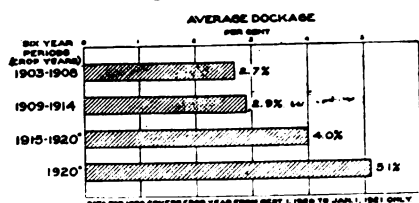
A greater economic waste is due to the expense of handling the dockage it

self. At the present time the farmers in the Central Northwest haul this dockage in the wheat to the elevators and sell the wheat without receiving anything for the dockage. Much valuable space is occupied in every wagonload of wheat in every country elevator, in every carload of wheat, and in every terminal elevator and flour mill by the dockage in the wheat. If this dockage could have been removed at the time of the threshing, the farmer would have been able to feed that part of the dockage having feed value, and he would also have saved the expense of hauling the dockage to the elevator. The farmer would in all probability have received a better price per bushel for his wheat if it had been clean, because, among other things, it is necessary in basing the prices which the country elevator pays for wheat to take into consideration either the cost of removing the dockage or the freight charges which must be paid on the dockage contained in the uncleaned wheat which is shipped to the terminal markets.

Dockage is always a troublesome factor in every stage of the marketing of wheat. It causes suspicion on the part of the farmer when he is selling his wheat, because he has to depend upon the integrity and accuracy of the buyer when the percentage of dockage is being determined. Every time the grain is sold one of the vital questions is, "How much dockage is to be assessed?" The only prevention of many of the disputes that arise during the marketing of wheat at the country elevator is either to raise wheat without dockage or to take the dockage out of the wheat before the wheat is sold by the producer.

The 17 seeds most commonly found in wheat grown in the Central Northwest are: Wild oats, wild buckwheat, tame oats, mustard, lambsquarters, barley, green foxtail, hares' ear, flax, rye, cow cockle, pigweed, yellow foxtail, sunflower, corn cockle, wild rose, and wild peas.

In past years, before wild oats became so numerous, it was possible to remove such weed seeds as mustard and cockle from the wheat at the time of threshing by the simple means of placing a sieve in the bottom of the threshing separator, under the chaffer. This method is no longer effective, because the wild oats which are present on nearly every farm in the Central Northwest



2. Chart showing the gradual increase of dockage found in spring-sown wheat from 1903 to 1920.

samples of seed wheat were taken from many of the drills which were seeding in the fields of Minnesota and the Dakotas last spring. On analyzing these samples it was found that a few were almost entirely free from weed seeds, but that the average amount of weed seeds sown with the wheat was over 2 per cent of the weight of the seed wheat. Many of the samples contained over 10 per cent of weed seeds, and one sample of wheat being seeded contained as much

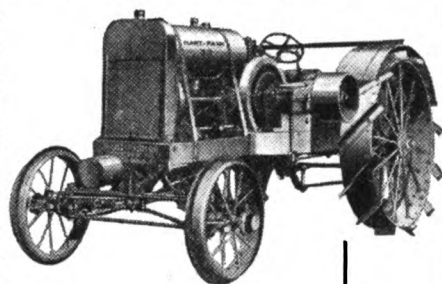
Address, in part, presented with lantern slides by Robert H. Black, in charge of the Minneapolis office of Grain Cleaning Investigation, U. S. Department of Agriculture, at the annual convention of the American Society of Agricultural Engineers, held in Chicago, December 28-30, 1921.

\$1595



Cut Almost in Half HART-PARR "30" NOW \$895

The rush is on — our announcement of a \$700 cut in price on the Hart-Parr "30" certainly created a real sensation in the tractor world. Hundreds of farmers who have been waiting for just this opportunity fairly flooded dealers with orders. The extraordinary value of the Hart-Parr "30" is so well-known that the price reduction announcement more than tripled sales within a week. It is only what we expected. The Hart-Parr "30" priced at \$895, gives the American farmer the cheapest power in the world.



Remember, the new price is on the same identical tractor, with many improvements, that has so often won the leading power and economy tests throughout the country.

Figure it in bushels of wheat—or corn

The new Hart-Parr "30" price, figured in terms of farm products, is far below any former figures. In 1913 it would have required 1423 bushels of wheat to buy a Hart-Parr "30." Based on the 1922 average price in the Chicago market, about 663 bushels will now put a Hart-Parr "30" on your farm. Compare new price with present price of almost any farm product—corn, cotton, oats, hogs—you will find the same great saving.

The big price reduction is creating an extraordinary demand. Get your order in now to insure prompt delivery.

HART-PARR COMPANY

Founders of the Tractor Industry

531 Lawler Street

Charles City, Iowa

May we send you a most interesting chart which shows by comparison how the farmer of today can make his dollars go farther than they have for years past? Send for it today.



Many of the old Hart-Parrs that plowed the virgin prairies of the Northwest are still in use today. The great grand-daddy of all Tractors was old Hart-Parr No. 1, built in 1901.

quickly clog the sieves, sometimes to the extent of even stopping the flow of wheat to the grain auger. It is impossible during threshing to remove many of the weed seeds by blowing them into the straw stack, because if sufficient wind is used to blow out the weed seeds a large amount of wheat will also be blown into the stack. Any apparatus, therefore, for use in connection with the threshing machine which can successfully clean wheat containing wild oats must be able to remove not only the wild oats but also have sufficient capacity to clean the wheat as rapidly as it is threshed.

In planning our grain-cleaning experiments to be conducted in the Central Northwest, it was decided to concentrate our efforts on the installation of two types of cleaners, namely, an "aspirator" and a "disk machine."

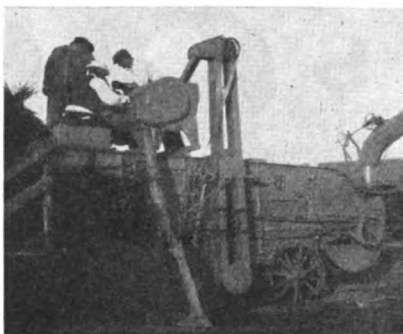
An experimental aspirator, designed by E. N. Bates, of the Office of Federal Grain Investigations, was built and installed on a 20 by 34 separator. The top of the aspirator was fastened to the hopper which is directly below the weigher on the elevator. A valve was built into the hopper under the weigher, so that the grain could be made to flow steadily out of the hopper and onto a metal disk 13 inches in diameter. In operation the grain piles up on this disk and then falls steadily over the edge of the disk in a thin stream. As the grain falls over the edge of this disk, it is treated with a current of air which sucks out many of the smaller and lighter weight particles which are deposited into a settling chamber, and the cleaned grain passes out thru a spout into the wagon. The suction is produced by an exhaust fan running 2,500 revolutions per minute and driven from the beater shaft. The total weight of the aspirator and exhaust fan is slightly over 160 pounds.



3. Aspirator grain-cleaning machine in operation during threshing.

The aspirator was operated while threshing oats, rye, and a mixture of oats and wheat usually known as succotash. In these experiments between one-third and one-half of the foul material or dockage was removed from each of the grains mentioned with a slight loss of small and shriveled kernels of grain.

After reviewing the advantages and disadvantages of the various types of cleaning machines on the market, a machine using the basic principle of disks provided with small pockets and moving vertically thru the grain was built. This machine was installed on the deck of a threshing machine operating in North Dakota and was used in an experimental way in connection with the threshing of various lots of wheat and admixtures of wheat, oats and barley containing all the way from 1 to 38 per cent of dockage. In these experiments

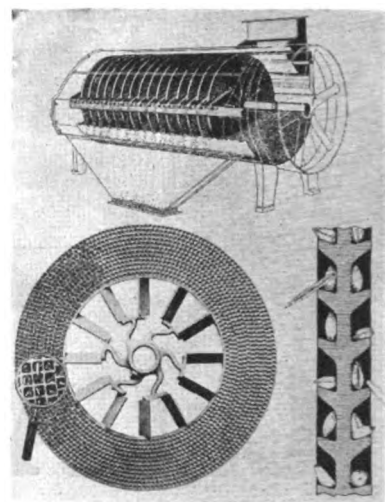


4. Disk grain recleaner in operation on the deck of a threshing machine.

the disk cleaning machine, or recleaner, as it is generally called, not only cleaned the grain as fast as it could be fed to the threshing separator, but in every instance removed all of the dockage contained in the grain to within 1 per cent, which in the case of wheat would grade as "dockage free" under the Federal standards. The screenings contained very little wheat; in fact, less wheat was found in the screenings removed by the disk cleaner than is ordinarily found in elevator screenings.

In operation the disk recleaner separates the grain delivered from the threshing machine into three parts: (1) Cleaned grain; (2) fine seeds; (3) wild oats, tame oats, barley and other coarse material. Each of the three parts is discharged from the recleaner thru a separate spout.

It is our plan to make certain improvements on the disk recleaner and to continue these investigations thru the next threshing season, because the results secured the past season in threshing and cleaning over 15,000 bushels of grain demonstrated that grain can be cleaned successfully at the time of threshing to a point where no dockage will be as-



5. Sectional parts of the disk grain-cleaning machine—top, showing arrangement of the disks in the frame; lower left, side view of one disk; lower right, cross section of disk illustrating how oats are separated from wheat.

sessed when the wheat is sold on the market. If wheat is cleaned at the threshing machine, farmers would not be paid lower prices or charged discounts because of the dockage which would otherwise be in it, nor would there be opportunity for disputes as to the percentage of dockage which would be assessed. The valuable parts of the screenings can be used for feed, and clean seed wheat will be available for sowing, which will mean increased yield per acre.

The Department of Agriculture is keenly interested from an economic standpoint in developing practical methods which will bring about the sowing of clean seed wheat and the marketing of wheat free from dockage. These experiments have demonstrated that wheat can be successfully cleaned at the time of threshing, and in the development of this method the agricultural engineers, the threshing machine manufacturers and the thresher operator can assist very materially in ridding the spring wheat states of the dockage problem.



The Value of Corn Stover

AUTHORITIES differ as to the value of corn stover as a food but there can be no question but what it possesses certain desirability. Thousands of dollars worth of valuable feed in this form is lost annually because the corn is left standing in the field until it has lost most of its food value thru leaching, or even if it be stored it is generally fed whole and most of it is wasted under the feet of the animals because they cannot reduce it.

With the tractor coming into common use on the farm, the preparation of stover with shredders is easy.



Chart of Recommendations

Trade Name	Motor Oil	Trade Name	Motor Oil
Akron.....	H.	Magnet B.....	H.
Allis-Chalmers—All Models.....	H.	Mark VI Once Over.....	H.
Allied.....	H.	Midwest.....	E. H.
All Work—Both Models.....	H.	Minneapolis, 12-25 and 17-30.....	H.
Andrews-Kinkade.....	E. H.	Minneapolis, 22-44 and 35-70.....	E. H.
Appleton.....	H.	Mogul.....	H.
Armington.....	H.	Mohawk.....	H.
Aultman-Taylor, 22-45.....	E. H.	Monarch-Industrial.....	H.
Aultman-Taylor, 30-60.....	E. H.	Nilson Junior & Senior.....	H.
Aultman-Taylor, 15-30.....	E. H.	Ohio.....	H.
Automotive.....	H.	Oil Gas, 20-42.....	E. H.
Avery Model C.....	H.	Oil Gas, 25-50.....	E. H.
Avery, 8-16, 12-25, 25-50, 14-28, 18-36, 40-65.....	E. H.	Parrett.....	H.
Avery Track Runner.....	H.	Peoria.....	E. H.
Bates.....	E. H.	Pioneer, 18-36 and 30-60.....	E. H.
Bates Steel Mule—All Models.....	H.	Plow Man.....	H.
Bear.....	H.	Porter.....	H.
Best Tractlayer, 30.....	E. H.	Port Huron.....	H.
Best Tractlayer, 60.....	E. H.	Prairie Dog, 10-18 and 15-30.....	H.
Big Farmer.....	E. H.	Quadpull.....	H.
Big Four, E-B.....	E. H.	Reed.....	H.
Biltwell.....	H.	Reliable.....	E. H.
Boring.....	H.	Rex.....	H.
Burnoil.....	E. H.	Rumely Oil Pull, 12-20.....	E. H.
Capitol—All Models.....	E. H.	Rumely Oil Pull, 16-30.....	E. H.
Case, 10-18 and 15-27.....	H.	Rumely Oil Pull, 20-40.....	E. H.
Case, 22-40.....	E. H.	Rumely Oil Pull, 30-60.....	E. H.
Case, 20-40.....	E. H.	Russell "Big Boss," 20-35.....	E. H.
Cletrac, 9-16 and 12-20.....	H.	Russell "Giant," 30-60.....	E. H.
Coleman.....	E. H.	Russell "Little Boss," 15-30.....	H.
Common Sense.....	H.	Russell "Junior," 12-24.....	H.
Dakota.....	H.	Samson Model M.....	H.
Dart Blue "J".....	H.	Savage A.....	E. H.
Depue.....	H.	Shawnee, 6-12 and 9-18.....	H.
Dill Harvesting.....	M. H.	Shelby Model C.....	H.
Eagle, 12-22 and 16-30.....	E. H.	Shelby Model D.....	E. H.
E-B, 9-16 and 12-20.....	H.	Square Turn.....	E. H.
E-B, 16-32.....	H.	Stinson Heavy Duty.....	H.
Farm Horse.....	E. H.	Titan.....	H.
Farquhar, 15-25.....	H.	Topp-Stewart.....	H.
Farquhar, 18-35 and 25-50.....	H.	Toro.....	H.
Fordson.....	H.	Townsend—All Models.....	E. H.
Flour City Junior, 20-35.....	H.	Traylor.....	H.
Flour City, 30-50 and 40-70.....	E. H.	Triumph.....	E. H.
Fox.....	E. H.	Trundar.....	H.
Four Wheel Drive Fitch.....	E. H.	Twin City, 12-20 and 20-35.....	H.
Frick, 12-20.....	E. H.	Twin City, 40-65.....	E. H.
Frick, 15-28.....	H.	Twin City, 60-90.....	E. H.
Good Field.....	H.	Uncle Sam—All Models.....	H.
Grain Belt.....	H.	Vim.....	H.
Gray.....	H.	Wallis.....	H.
Great Western.....	H.	Wallis Cub.....	H.
Hart-Parr—All Models.....	E. H.	Waterloo Boy N.....	H.
Heider—Model "C".....	H.	Wellington, 12-22 and 16-30.....	E. H.
Heider—Model "D".....	H.	Wetmore.....	H.
Holt Caterpillar, T-35.....	H.	Western.....	E. H.
Holt Caterpillar (5 Ton).....	H.	Wheat.....	E. H.
Holt Caterpillar (10 Ton).....	E. H.	Whitney.....	E. H.
Holt Caterpillar (15 Ton).....	E. H.	Wichita.....	H.
Huber Light & Super Four.....	H.	Wilson.....	H.
Illinois Super Drive, 18-30 and 22-40.....	E. H.	Wisconsin, 16-30 and 22-40.....	E. H.
Indiana, 5-10.....	H.	Yuba Ball Tread—All Models.....	H.
International, 8-16.....	H.		
International, 15-30.....	H.		
J. T.....	E. H.		
Keek Gonnerman.....	E. H.		
Kinnard.....	H.		
La Cross.....	H.		
Lauson, 12-25 and 15-30.....	H.		
Leader, 18-36.....	H.		
Leader, 12-18 and 16-32.....	E. H.		
Leader, 18-35.....	E. H.		
Leonard Four Wheel Drive.....	H.		
Liberty.....	E. H.		
Little Giant A. & B.....	H.		
London Model S, 12-25.....	H.		

N. B. For recommendations of grades to use in auto-

Is Your Tractor Behaving To Suit You?

WHEN your horse gets an orn'ry streak you know just how to handle him because you've had years of experience with horses. But how about your tractor? You see, a tractor's a human sort of thing. It has cranky spells whenever it feels it isn't being treated just right. And a lot of this mis-treatment comes from wrong lubrication.

Use Polarine

THE PERFECT MOTOR OIL

Made In Four Grades

Seals Pistons Against Loss of Power

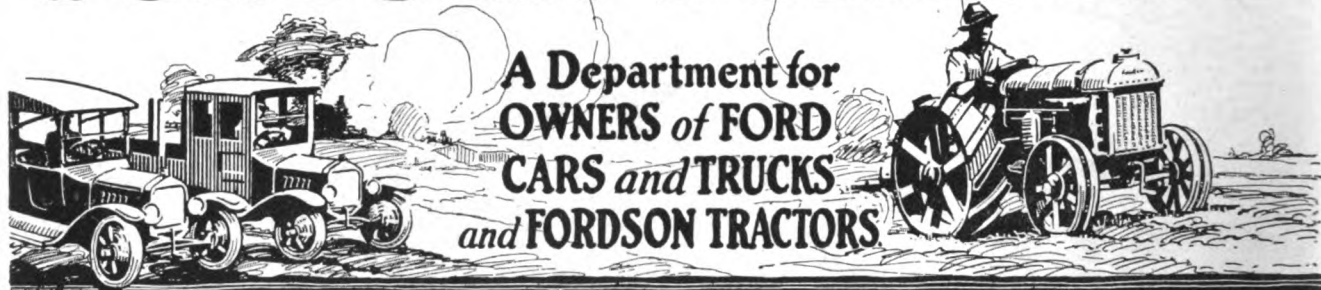
Did you ever stop to think of the great number of parts to be lubricated; parts which can and will go wrong with improper lubrication?

You don't have to use guess-work in finding out which lubricants will keep your tractor in a good humor. The chart to the left tells you what grade of Polarine to use to obtain the full power the tractor was designed to deliver, to reduce your repair bills to a minimum, to give long life to your tractor, and to effect the greatest saving in fuel.

For years the Standard Oil Company (Indiana) has maintained a comprehensive laboratory with a department especially equipped to make lubricating oils and greases. The chemists of this Company, working with the lubricating engineers, have perfected a grade of Polarine which gives correct lubrication for every make and type of tractor. These men know just why it is best for you to use Polarine, The Perfect Motor Oil.

STANDARD OIL CO., 910 So. Michigan Ave.
CHICAGO

FORDS *and* FORDSONS

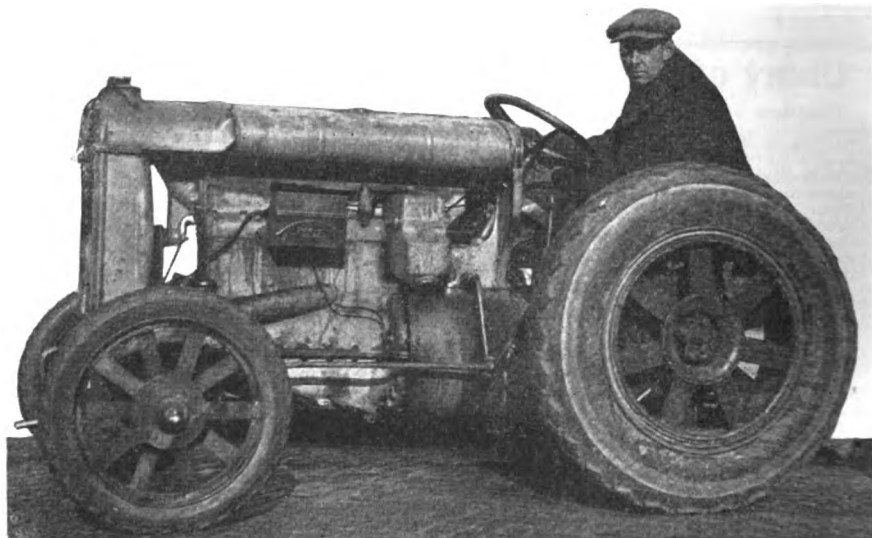


Fordson Ignition System

THE ignition system of the Fordson tractor is identical with that of the Ford car. The electrical current is produced by the magneto which is built on the flywheel. The current is low voltage (about 9 volts), thus it has to be transformed to a high tension current in order to jump the spark gap at the plug. The current is led from the magneto contact to the coil box as shown. The low tension current travels to the commutator or timer. The timer is located on the front end of the cam shaft. The timer consists of four contact segments spaced on quarters and are embedded in a ring of fiber which is retained in a casing of aluminum. The central revolving element carries a lever which has a roll at one end and a tension spring to keep the roller in contact with the inner periphery of the fiber ring.

This roller needs lubrication from time to time. It is a good idea to use a thin grade of oil on it. Never use cup grease, because the cup grease will form on the roller and prevent the roller coming in contact with the metal on the time cases.

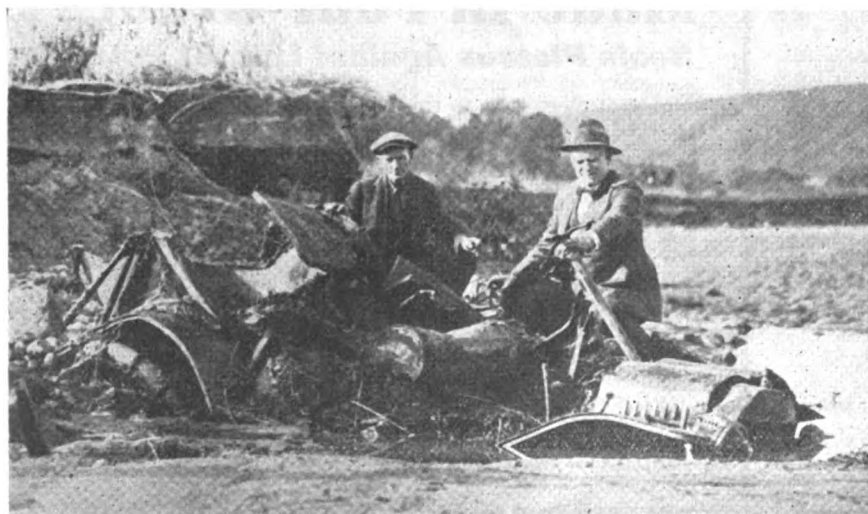
The coils are located in a metal



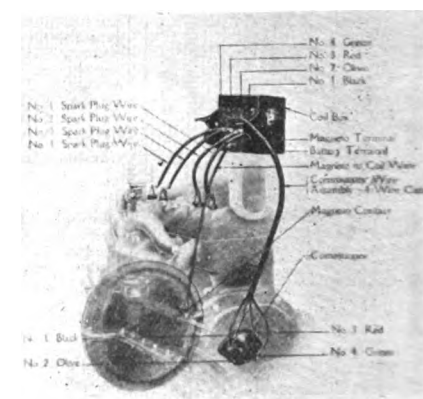
Frank J. Burnham and the Fordson Tractor with Which He Towed a 10-Ton Load at a Speed of 18 Miles an Hour, Demonstrating the Usefulness of the Tractor as a Hauling Unit in the City as Well as Country.

box which has a lid to protect the coils from the weather. It is a mistake to leave the cover off. Sometimes the wires in the commutator assembly (see illustration) become broken or oil soaked and must be replaced. The commutator or timer is located in a

place where a little of the mineral oil in the crank case may leak out and soak the ends of the wires. By reference to the picture anyone can easily install a new commutator wire with-



This Ford Car Was Caught in a Flood and Remained Buried in Silt and Sand in a Riverbed for Six Years. It Was Recovered and Now Is Doing Daily Duty on the Street of San Diego, Calif.



The Fordson Ignition System.

out trouble. The red, green, black and olive colored wire coverings are noted at the coil box as well as at the commutator. One will also note that the firing order of the cylinders is 1-2-4-3. When the commutator wire is installed the spark plugs can be



**SELLS MORE
FORDSONS**

**SELL FOR
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—MORE POWER

RIGID RAIL TRACKS fitted to your Fordson in an hour will again bring you that same increased satisfaction you felt when you discarded your horses for the more efficient tractor. There is that much difference in the amount of power and better performance Rigid Rail Tracks give you. The biggest improvement yet for the Fordson.

DEALERS — Write for further information and regarding sale of Rigid Rail Tracks.

THE RIGID RAIL TRACKS

Make A Crawler of Your Fordson

The lowest priced Crawler on the market.

Doubles the Draw Bar Pull

You do more work with the same amount of fuel.

Eliminates Slippage

Same speed as the wheel machine, but

Lower and Narrower and More Powerful

For orchard and vineyard.

Works on Soft or Sandy Ground

Fine for the rice fields.

Will Outwear Your Tractor

With Hyatt Roller Bearings and Alemite cups.

Turn Shorter Under A Load

A hand brake for each track.

Easy to Attach

Any one can do it in an hour.

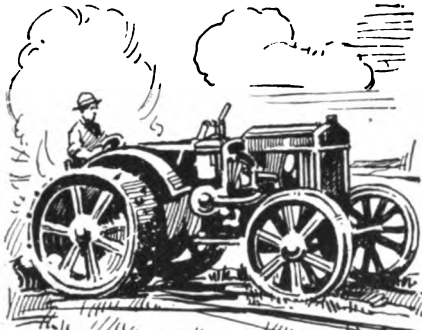
**Rigid Rail Tracks Sell to Fordson
Owners and—They Sell More Fordsons!**

**The
Hadfield - Penfield
Steel Co.**

BUCYRUS - - OHIO

FOR-YOUR FORDSON

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Tractor Efficiency

To get the most WORK out of your tractor you've got to have piston rings that won't leak.

No-Leak-O Piston Rings won't leak because they're sealed with oil.

The patented "oilSEALing" groove—found only in No-Leak-O—packs an oil film in between your piston and cylinder walls like "packing" in a pump.

This oil "packing" seals in *all* the expanding gas. Every drop *must* work.

The same "film" prevents oil from working up into your cylinder heads to form carbon and keeps "unburnt" gas and kerosene from seeping down into the crank case to weaken lubrication. No-Leak-O gives perfect oil control and compression in each individual ring.

Jobbers and Dealers: Write to-day for literature and liberal dealer proposition. Let us tell you how our National Advertising helps bring you business.

Owners: Write for interesting booklet, "The Piston Ring Problem and Its Solutions."

NO-LEAK-O PISTON RING CO.

Dept. F-2

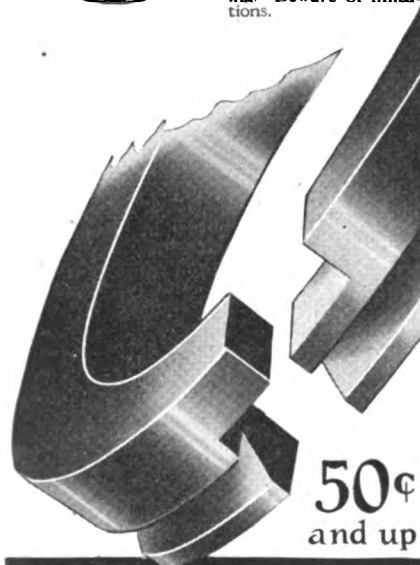
BALTIMORE, MD.

One price during eight years of continued success

One design—for all cars—50c and up



READ THIS SIGN
Remember it—Look for it. It marks a Garage or Supply Store that is "live" and dependable. Even if your Garage Man doesn't display it, tell him you must have No-Leak-O Piston Rings for your next overhauling. Beware of imitations.



NO-LEAK-O
PISTON RINGS

taken out and placed on the engine and the order of firing of the cylinders checked up.

The points on the vibrators should be kept clean. They sometimes become dirty. They can be cleaned with a small, thin file or emery paper. Don't tamper with them unless they give trouble. The front spark plug

often gets oily and carbons up.

If the Ford car ignition gives trouble it can easily be taken to the garage, but in case of the tractor a man from the garage has to come to the tractor. It would be well for a Fordson owner to cut this diagram out and hang it in the tractor shed for reference.

MOTOR TROUBLE ADVICE FOR FORD OWNERS

By F. M. Service

Fixed the Trouble

TO THE EXPERT:

I want to thank you for your help given me in locating my trouble with my Ford. I had a stopped oil line, but after a thoro overhauling and putting in oversize pistons I failed to get any power. I did the work myself, but I had taken the machine to a few mechanics in the garage business and they told me I would have to have a new block.

I then explained as best I could in a letter and told you how it acted. I firmly declared to the garage man that I did not have the timing gears off, but on receipt of your letter I remembered that the crank shaft was loose while I was taking up the bearings and I did jerk it clear up while twisting it, but I did not have it out.

So you were exactly right in saying I had my valves out of time. Upon examination I found them to be two cogs slow. I put them right and now my Ford works fine, having a pickup, lots of power and speed.

Thanking you very much for your service, I am, WALTER C. HAYNES, Swayzee, Ind.



Fordson Fuel Consumption

TO THE EXPERT:

I have a new Fordson and do not get enough power out of it. I use 25 gallons of kerosene and 2 gallons of oil in ten hours. What can I do to save oil and get more power?

Would you advise the use of inner ring?

Does gasoline give any more power than kerosene?

In FARM MECHANICS I notice a Fordson will do ten hours work on \$1.75 worth of oil. Tell me how that is done. —W. A. BAUGH, Helton, Kan.

Answer—Under the proper load and when handled carefully a Fordson should operate ten hours on five gallons of kerosene and one-half gallon of oil. The quantity you state you are using is

out of all proportion to work done, and there is doubtlessly something wrong, probably poor adjustment of the carburetor or a burned out vapor tube. This would account for the loss of power you complain of.

First, try adjusting the carburetor by turning it back to the right until the motor starts to pop when the throttle is opened quickly. When this point is reached, turn it back to the left until just where the popping ceases, when the throttle is quickly accelerated. If the carburetor when properly adjusted does not increase the power and decrease the kerosene and oil consumption, the vapor tube is probably burned out, due to leaving the shunt valve open when operating on gasoline. To inspect this, remove the bottom of the manifolds and it can be taken out. If it shows signs of being burned thru the walls, replace it with a new one.

Also be sure that your air washer is clean and operating properly, as a punctured float or a dirty bowl will also cause a motor to run poorly. You cannot get as much power from gasoline as from kerosene, when the kerosene is vaporized properly and mixed with the correct proportions of air.—F. M. SERVICE.



Trouble Starting Ford

TO THE EXPERT:

I would like to know if you can give me any information on how to start my Ford in cold weather. I have tried the following to start it. "She is a tough one."

I have opened the carburetor one turn, cleaned spark plugs, used batteries, new timer, new wires, had block rebored, new over-size pistons, and magneto coils put in last summer. Have heated the oil, heated the water for radiator, put boiling water on manifold. I have also tried leaving key turned off, primed engine, then turned on key and cranked, but without avail. I would like to know if it hurts the car to raise one hind wheel while cranking.

When warm it is easy to start, but when a little bit cold very stiff and very

seldom starts. I have used a horse hitched to it to start it. I have had the points on coils all gone over by one of the best experts.—JACOB WHITE, Hermansville, Mich.

Answer—The trouble you are having in starting your car when cold is not due to any battery, carburetor or ignition defects, but is simply a case of a stiff clutch, caused by the clutch not being properly adjusted. When your car is in neutral the clutch plates are too close together and when the oil becomes cold and stiffens up, it causes the plates to stick. If you jack up one rear wheel and throw the emergency handle forward you will probably find it will start without difficulty.

To set the clutch so this will not be necessary just try screwing the adjusting bolt which is on the small arm attached to the first speed pedal and which rides the cam on the emergency lever shaft, when it is pulled back. Turn this down several turns and it will cause the clutch plates to disengage more in neutral. If this does not help, remove the sloping door on the transmission cover, and after pulling out the three cotter pins in the clutch fingers, back out each of the adjusting screws one-half turn and replace the cotter pins. Try each finger to see that it is loose when the emergency lever is in neutral. If any of the three have not some play in them, back out the split screw until it can be moved.—F. M. SERVICE.



Rules of the Road - Tokio

(Posted in the Central Police Station)

1—At the rise of the hand of the policeman stop rapidly. 2—Do not pass him by or otherwise disrespect him. 3—When a passenger of the foot hove in sight tootle the horn; trumpet at him melodiously at first, but if he still obstacles your passage tootle him with vigor and express by word of the mouth the warning "Hi Hi." 4—Beware the wandering horse that he shall not take fright as you pass him by. Do not explote an exhaust box at him. Go soothingly by. 5—Give space to the festive dog that shall sport in the roadway. 6—Avoid entanglement of dog with your wheel spokes. 7—Go soothingly on the grease mud as there lurks the speed demons. 8—Press the brake of the foot as you roll around the corner to save collapse and tie up.



Class by Itself

I APPRECIATE your magazine and class it above all other farm magazines. Your articles on poultry and fruit growing have been the most useful to me.—O. W. JACOBS, Sisterville, W. Va.

Brownell VISIBLE FORD OIL GAUGE

Is convenient—dependable—economical.
The gauge easily seen and read from driver's seat.
It shows exact amount of oil in motor.
Tells quantity of oil to buy—no waste.
Eliminates carbon fouled spark plugs—burnt out bearings.
Guarantees correct motor lubrication.
No getting "out and under."
No petcocks to open.
No soiled hands or clothes.

Price **\$3.75** Only
Guaranteed satisfactory or money back.

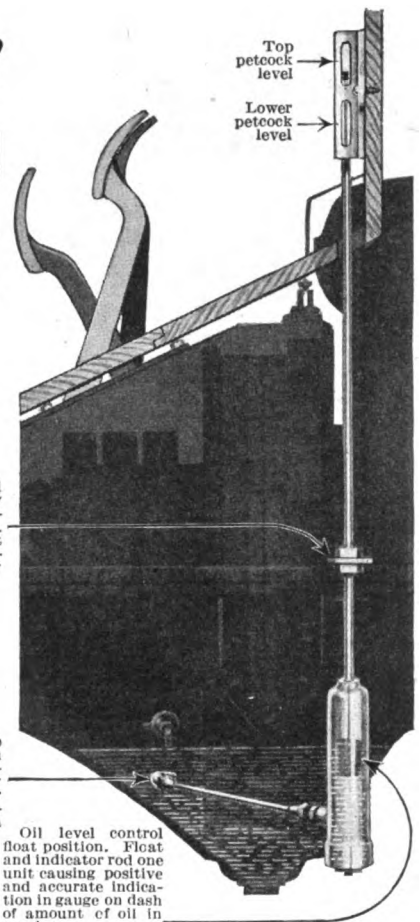
Brownell Oilrite Spring Oiler

Automatically lubricates the leaves of the spring by their own action. Price \$1.00 each. Ford set \$4.00 guaranteed.

Easily attached and held rigid by special fitting supplied with gauge. Nothing to rust and get out of order. Mechanically perfect.

The Brownell Motor Specialties Mfg. Co.
Dept. F. M., Dayton, Ohio
Gentlemen: Enclosed find (check) (P. O. or Express Money Order) for \$..... Ship via parcel post or express prepaid (number or dozen) Brownell Visible Ford Oil Gauge
Name.....
Street No.....
Town and State.....
Dealer's Name.....
Address.....
If this coupon is used by Dealer we will send shipment C. O. D. including a supply of advertising literature, also a demonstrating display outfit with order for one dozen or more.

Attaching here causes gauge on dash to show empty when oil supply is at level of lower petcock. Still sufficient oil for a short distance



Brownell Motor Specialties Mfg., Co., Dayton, Ohio



The STANDARD GOVERNOR will cut repair costs, decrease fuel costs, prolong the life of the Ford Truck or Fordson Tractor, and pay for itself many times over by increased efficiency in field and road work.

The STANDARD GOVERNOR has many points of mechanical superiority. Because of its all 'round high quality, it cannot be sold for a price as low as the prices set on inferior makes. It does everything that a good governor is supposed to do and it performs those duties efficiently, economically and lastingly. It is very easily installed.



Send for the
Farmers Handbook
Free

The automotive dealer who is not selling his share of Standard Governors is passing up an opportunity in his territory. The Standard Governor is a fast selling device that gives the dealer a quick turnover and gives the truck or tractor owner lasting satisfaction. Write us today for prices and further information.

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New York, 245 W. 55th St.
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San Francisco, 32 Van Ness Ave.

Detroit, 4610 Woodward Ave.
Boston, 15 Jersey St.

Our Implement Inspector



HE finds much new and worth-while farm equipment offered to increase efficiency and cut down labor.

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An Adjustable Disc Vineyard Harrow

SPECIAL harrows to meet various conditions in vineyards have been developed, as this work requires careful manipulation of implements to give proper cultivation and at the same time not injure the vines. A vineyard and orchard disc harrow that the manufacturers claim will meet all conditions is shown in the accompanying illustration. This harrow is adjustable so that the owner can handle his own particular kind of work regardless of crop, soil or type of vineyard.

Four sets of five blades, two sets of inthrow and two sets of outthrow, are attached to the frame. By means of the regulating clevis connecting the harrow to the tractor, both front and rear harrows are automatically angled to working position by the draft of the tractor. The adjustment of this clevis determines the degree of working angle for both front and rear harrows. Full or less than full angle can be obtained as desired. The adjustments are quickly and easily made from the tractor seat. Thus the harrow meets every tillage requirement of the vineyard regardless of the width of rows. By loosening the clamps hold-

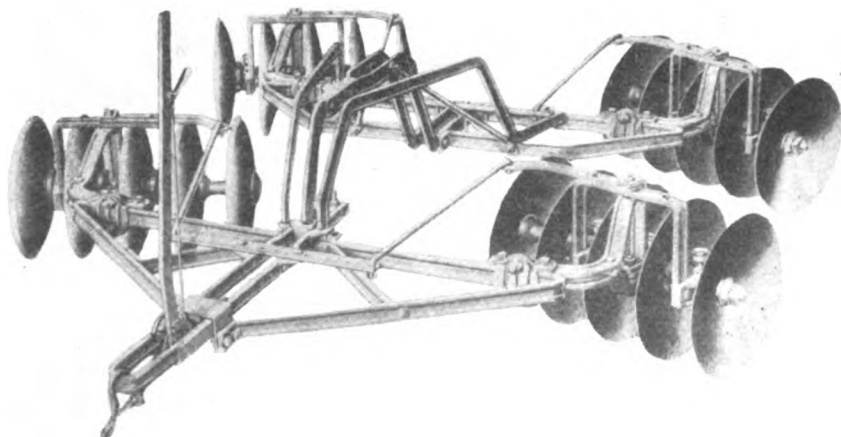
ing the gangs to the frame of the harrow the gangs may be set in or out on the frame to meet the needs of different crops. The gangs may be set to four different positions, providing four different cutting widths.

The operator of this harrow may use the gangs in any combination desired. The front gangs may be set to throw the soil out and the rear gangs to turn it in. Or this position may be reversed. In the same way all four gangs may be set to throw the soil the same way.

This harrow is made in three different sizes—16, 20 and 24 blades—with either 16- or 18-inch discs, the widths of which are four, five and six feet.

The smallest size harrow, four discs to each gang, may be used under any condition where the tractor may be used. The usefulness of the harrow is further increased by the ability of the operator to tilt the gangs regardless of their position on the frame or whether set for outthrow or inthrow. The harrow is extremely low down and built close to the ground, practically all the weight being level with the axles, thus assuring maximum penetration and pulverization by the disc blades.

This harrow is specially designed for use with the Fordson tractor.



New Vineyard Disc Harrow That Is Adjusted to Meet All Orchard Conditions.

Puncture Proof Tire and Ford Truck Wheel

A WHEEL of unusual construction, designed for the rear axle of the Ford truck, combines both a pneumatic tire and a solid truck tire, the former being inside of the wheel, giving it resiliency and the latter on the wearing surface. The illustration shows how the two tires are combined, the photograph having been taken with the disc covering removed.

By examining the illustration it will



Wheel for Ford Truck That Is Puncture Proof but Resilient.

be seen that there is a small wheel or hub mounted on the axle. On the outside of this wheel is a rim on which a pneumatic tire is mounted. Riding this pneumatic tire are metal saddles so constructed that there is a swing to them under the pneumatic action of the tire. Securely protecting this is another rim on which is mounted a solid rubber tire. This solid rubber tire is in direct contact with the road and tho it might be punctured ever so many times the pneumatic tire is not injured because of the intervening metal rim. The pneumatic tire fulfills its purpose of giving resiliency

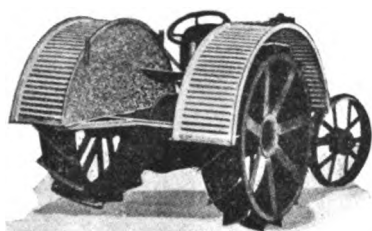
and at the same time is not subject to traction wear.

The manufacturers of this wheel guarantee that the pneumatic tire will give 80,000 miles of use, while there is a 25,000-mile guarantee on the solid rubber tire.



Fordson Fenders

As a means of safety and comfort for the driver of the tractor, many Fordson owners are equipping them with fenders. The nature of the ground over which the Fordson usually travels makes jolting almost continuous and



Fordson Equipped with Corrugated Fenders

to protect the driver from a fall on a rear wheel the fender is installed. Shown in the illustration is a Fordson equipped with corrugated heavy galvanized iron fenders. The braces of the fenders are so arranged that they do not interfere with the driver getting on and off and at the same time they provide the means of putting in a floor, or platform. Holes are drilled ready for the installation of a canopy. Only a wrench is required to install the fenders.



Tractor Hitch That Utilizes Full Power

A TRACTOR hitch, designed for the Fordson, that is attached both to the front axle and the tractor drawbar gives the full power of the tractor when it is at work in the field. In a recent demonstration a Fordson, equipped with this hitch and drawing a two-bottom plow, turned 12-inch furrows, 7 inches deep, in a field of black earth full of roots that had not been plowed as long as the owner remembers. One other tractor had attempted to plow this field, but buried itself after going 20 feet. The Fordson was put in and performed the work, altho twice the rear wheels sunk so that the bottom of the tractor was lying on the ground. By using planks the operator had no difficulty in getting out without detaching the plows.

The hitch is made entirely of steel and very strongly built; not a casting in it. Consists of five main parts—back end, front end, connecting rod, main

"I Cleared \$3700 Last Year With Your Ditcher"

Joseph Rivard

JOSEPH RIVARD is but one of hundreds of men who have taken up this big-money business of ditching. And many others are making even more with a *Buckeye Traction Ditcher*.

"We made \$4500 last year with our Buckeye," write Herr Bros., Piper City, Ill. "We have just ordered two more machines, making five in all, which we own."

Made \$71 In One Day

R. W. Sherrard, Rochester, Ind. writes, "In one day's work with my Buckeye, I cut 117 rods of ditch 42 inches deep, for which I received \$71. I have had my machine for three years, but run it only half the time as I have other work to attend to. It is still in A-1 condition."

We Will Show YOU How To Make Big Money

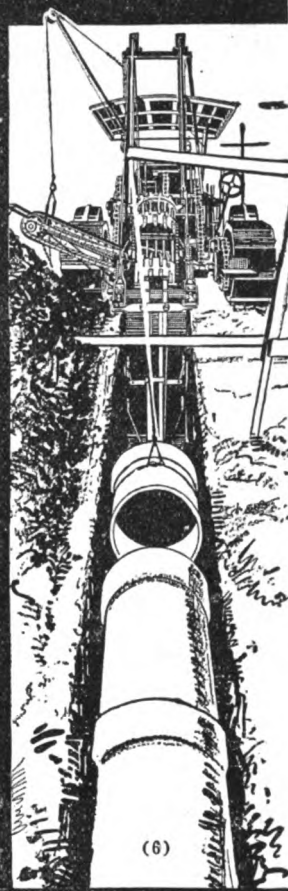
These are average letters from a few Buckeye owners. We have started hundreds of others—farmers, farmers' sons, contractors—in this high-profit business of ditching. Right in your own locality, spare time or full time, you too, can easily make thousands of dollars a year in this big-money work. *No experience necessary.* Our service engineers start you right and stand behind you.

For the ability to dig through the toughest jobs, through hardpan or frost; for built-in ruggedness and durability; for the utmost service through season-after-season continuous work, *the Buckeye Ditcher is without an equal!*

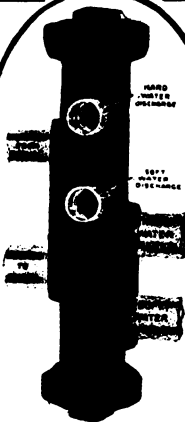
Drop us a line today. Let us talk over with you the ditching possibilities in your section. We will give you our unbiased advice about starting in this large-paying business in your locality. Write today.

The Buckeye Traction Ditcher Co.
536 Crystal Ave., Findlay, Ohio

I cleared \$3700 above all expenses last year with a Buckeye. I dug 23,431 rods of trench during the 1918 season—as high as 325 rods in one day. Will be glad to write anyone who is thinking of going into the ditching business.
—JOSEPH RIVARD, Tilbury, Ont.



(6)



The DUAL AUTOMATIC VALVE

Pump Both Hard and Soft Water

Attach a Dual Automatic Valve to your pump—you have soft water for the laundry and hard water for cooking, drinking, etc.

The Dual doubles the comforts and conveniences to be had from your pump. Entirely automatic; and nothing complicated about it. The cost is very moderate—it saves the cost of an extra pump.

Write us for illustrated pamphlet

DUAL AUTOMATIC VALVE CO.
BEST BUILDING ROCK ISLAND, ILL.

Read What Owners Say Of the Wonderful

Phelps

Power and Light

"Phelps is simple to operate, dependable, economical"—ARCHIE HILES, Dunkirk, Ind.

"100% efficient and more simple than others"—MOORE BROS., Jackson Center, Pa.

"Put your prospects in touch with us"—GLENWOOD MINERAL SPRINGS, Chillicothe, Ohio.

"We wouldn't get along without it"—HENRY HOFF, R 4, Saginaw, Mich.

"Only 2c a day for Phelps complete service"—RALPH WHEATON, Alma Center, Wisc.

"I cut my light and power bills from \$75.00 to \$8.00 per month with the Phelps"—LEO KRAMER, Hillsboro, Ill.

"Simple, easy to handle"—J. O. LARSON, Leonardville, Kans.

"Best plant made"—JOHN F. S. ZAIS, West-ernport, Md.

"Owned a Phelps 3 years and have never been without light a single night"—J. L. NOVAK, Allen, Nebr.

"Phelps is the ideal plant"—F. W. ROBBINS, Attica, N. Y.

WRITE FOR 2 FREE BOOKS

Learn how much happiness, comfort and rest Phelps brings to farm homes. Mail the coupon today whether you are thinking of buying a light plant right now or not.

To Dealers—Phelps dealers are successful. We help you find prospects and close sales. Get all facts. Write

Phelps Light & Power Co.

614 First St.

Rock Island Illinois

Phelps Light & Power Co.

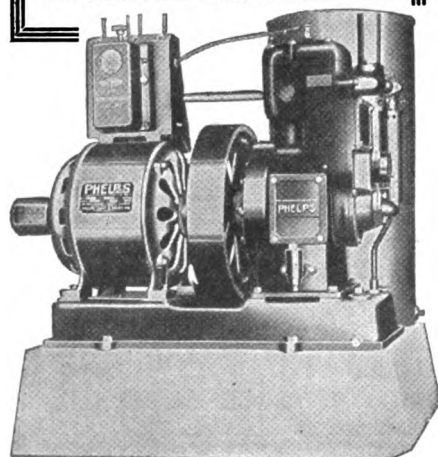
614 First St. Rock Island, Ill.

- ☐ Send me your 2 free books
☐ Send me your dealer franchise facts.

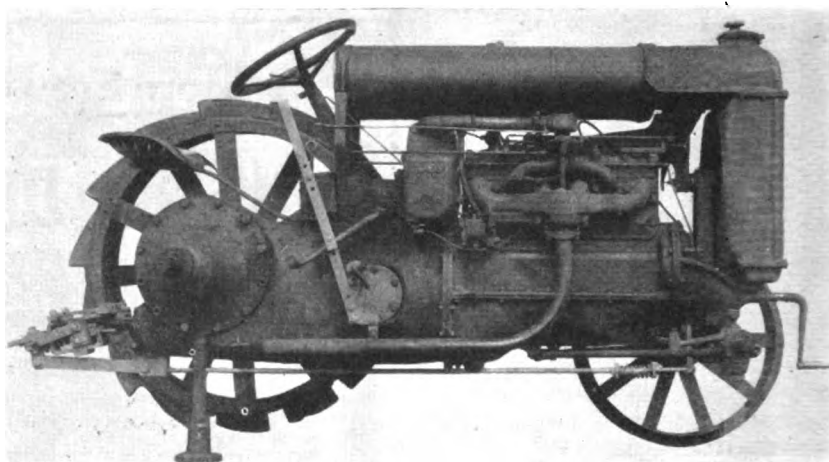
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WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS



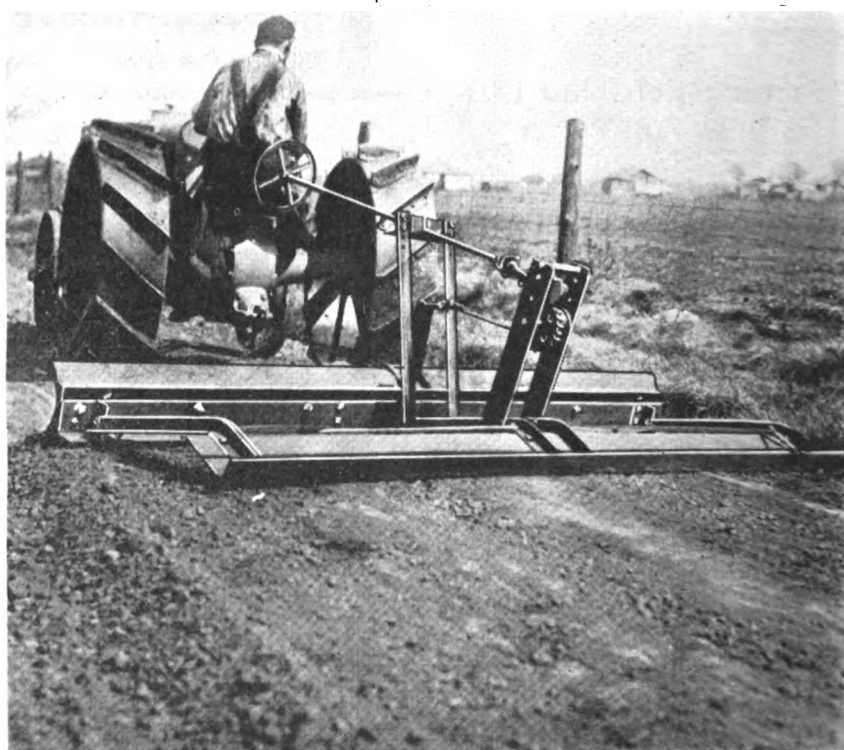
Tractor Hitch That Is Attached to Front Axle and Utilizes Full Power of Machine.

spring and auxiliary spring. The back end of the hitch is attached to the tractor draw bar. The front end of the hitch is attached to the front axle. Between the tractor draw bar and the draw bar of the hitch is the main spring which provides a cushion draw bar. On the front end of the hitch is the auxiliary spring, directly connected to the draw bar of the hitch by a strong steel rod underneath the tractor, which also protects the transmission housing.

As the tractor starts forward pulling the load, it compresses the two springs. As the draft increases the pressure on both springs is also increased. The pressure on the front wheels is governed entirely by the load you are pulling. The

hitch is so adjustable that by tightening the two nuts on front end of connecting rod, sufficient pressure can be put on the front end to keep it at all times in line of draft, under all conditions, when pulling any load to full motor capacity, in any traction, anywhere. Also makes steering a great deal easier, especially in soft ground, climbing hills, or when pulling heavy loads.

The two springs in the hitch provide a perfect pull when starting every load, acting as a shock absorber, eliminating the sudden shock and strain to the motor, transmission or implement you may be pulling, thus insuring longer life to the tractor and less repair bills. It is indispensable when plowing in stony



Road Planer Built to Attach to Fordson Tractor. The driver operates both the tractor and planer from the tractor seat.

soil, stump land or when starting heavy loads. When striking something that won't come, the springs take the shock and unless the clutch is released the rear wheels will slip or the motor will stop.

The hitch has a five-hole draw plate which provides adjustable draft when plowing, also an offset for other implements and extends far enough to the rear to permit much shorter turning without the rear wheels coming in contact with the tongue or chain connecting it to the cultivator, binder, grain drill, wagon or any load you may be pulling.



Fordson Tractor Planer

SINCE the advent of the farm tractor it has been rapidly adapted to road maintenance work. The pulling power of the tractor permits heavier road machinery to be used and its speed enables it to cover a great deal more road surface. Use of the tractor has also brought about specially designed road making and maintenance equipment, such as the scraper and planer.

Shown in the illustration on the opposite page is a planer designed especially for use behind the Fordson tractor. This is a one-man outfit, the planer controls being such that they may be operated by the driver of the tractor.

This is commonly called a moldboard planer and has a number of distinctive features.

The hand wheel with the shaft is placed within easy reach of the tractor operator.

The planer can be shifted to any angle desired to the line of draft and is secured to that angle by the insertion of a pin.

The moldboard is polished and sharpened and is deeply concave so that the dirt is gently rolled up with the least resistance. It is beveled top and bottom so that when one edge is worn it may be turned over and used again.

A worm and worm gear arrangement is used to raise and lower the moldboard. A few turns of the hand wheel causes instant action of the moldboard, so that adjustment of cut can be made readily.

The rear blade of the planer acts as a drag to spread out and distribute the dirt released below the moldboard, smoothing the road like a trowel.

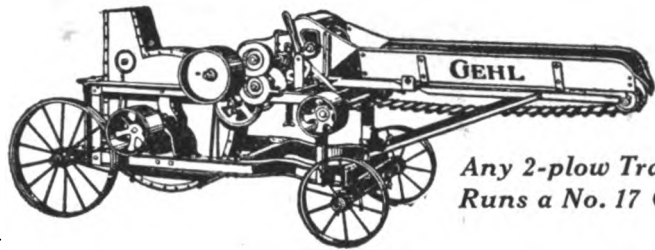
The draft beam is made of 6-inch channel steel and has a special clevis which fits the draw bar cap of the Fordson.

Road officials who have used this planer say it and a Fordson tractor make a handy combination for road maintenance work.



IF you have found out anything extra good or ingenious tell "Handy Andy" about it.—The Editor.

Cuts More Ensilage With Less Power



Any 2-plow Tractor
Runs a No. 17 Gehl

Impartial University Test proves our claims—No. 17 Gehl Silo Filler required only 63% as much power per ton as the lightest running of its competitors in the test.

The Gehl is absolutely self-feeding—saves a day's pay every day because *no man is needed at the feeder*.

Built on all steel frame—durable, economical to operate, does best possible job of cutting—can be equipped with Gehl Recutting Attachment for making Alfalfa meal or corn stalk meal.

Write for catalog and full report of University test. Give height of your silo, size of engine and speed of pulley and get complete information about cutter that completely fills your requirements.

FORDSON DEALERS

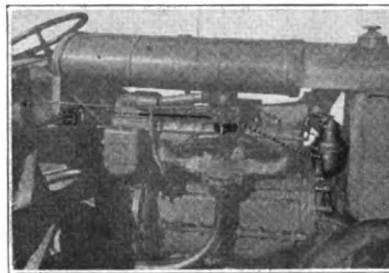
This 17-inch cutter meets the exact requirements of the Fordson Tractor.

Gehl Bros. Mfg. Co., 615 So. Water St., West Bend, Wis.

THE TACO GOVERNOR

for

New Style Fordson



The TACO Governor has been changed in design for attaching to the Fordson Tractor having new type manifold.

Ford Dealers everywhere have been rapidly selling TACO Governors because of the unusual satisfaction given. This means that over 40,000 Reliable TACOS, or more governors than all other makes combined, have been placed on Fordson Tractors to date.

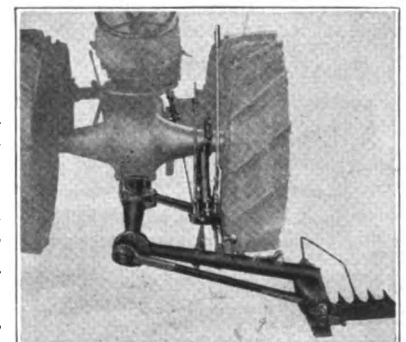
Regardless of motor speed the TACO Governor automatically adjusts itself to take care of the unusually heavy loads.

If desired, hand throttle can be used for speeding up motor in anticipating loads. It is not necessary to cut out governor under extremely heavy loads for the opening in the TACO BALL BEARING THROTTLE VALVE is as large as opening in carburetor, therefore permitting motor to develop maximum horsepower. The TACO is the only governor with the Ball Bearing Throttle Valve.

The Reliable TACO-MEYERS Mowers for Fordson

In keeping with increased sales and lowered manufacturing costs, the price of the TACO-MEYERS Mower has been greatly reduced. The TACO-MEYERS Mower has been so satisfactory in service that farmers everywhere are not only asking for it, but are recommending it to their friends.

In actual practice the TACO-MEYERS Mower has done more work than two horse-drawn mowers. This is due to the fact the Fordson travels rapidly and the entire outfit is easily handled. The sickle bar is so located that square corners can be cut without circling or backing. There is plenty of clearance for heavy clover or alfalfa. A safety device stops the tractor if an obstacle is met. The entire mower is easily and quickly attached. It is the simplest mower made for the Fordson.



The Tractor Appliance Co.
211 Monroe St. New Holstein, Wis.



A Friend in Need

The greatest convenience ever invented for motorists who drive on country roads. It saves time, trouble, cost of new tubes and repair bills. With the simple Shaler Vulcanizer you can make permanent, heat vulcanized tube repairs in five minutes. Easy to use, and works automatically, without fail, in wind or storm. Cannot burn or injure your tubes. Over a million motorists carry the Shaler for making quick tube repairs.

Simple, compact, handy. Just touch a match to the solid chemical fuel. In five minutes the cut or puncture is repaired—a heat-vulcanized, permanent repair that will not come off, better than any temporary "stuck-on" cold patch—stronger than the tube itself.

The Shaler also repairs rubbers, rubber boots, hot water bottles, rubber gloves, coats, etc.

Complete Outfit, \$1.50 At All Auto Supply Stores

The outfit includes—the Shaler Vulcanizer, 12 Patch & Heat Units, with complete instructions. Extra Patch and Heat Units 75 cents a dozen. Prices slightly higher west of the Rockies and in Canada.

C. A. SHALER CO.

2260 Fourth St., Waupun, Wis.



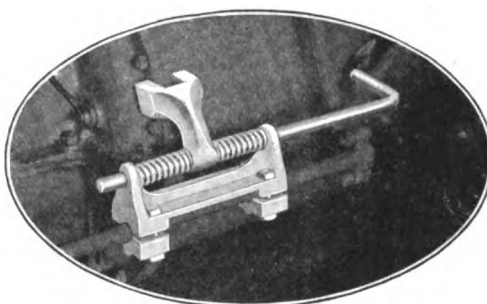
WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

Why Plow Hitch Was Devised

THERE'S a territory up in Eastern Wisconsin that is very stony—in fact, after a couple of generations have delved, with diligence, surrounding the farms with beautiful stone walls, there seems to be an inexhaustible store of them ever working up to the surface.

The condition was so bad that tractor salesmen found it practically impossible to sell tractors as the everlasting shearing off of the hitch pins made the use of the tractor a veritable nuisance.

Again necessity, the necessity to make sales, was the mother of invention—



Plow Hitch Designed for Use with
Tractor on Rough Ground.

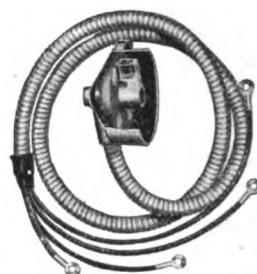
one of these salesmen decided to beat the stones at their own game. He set himself to the task of devising a plow hitch that should be a permanent coupling, automatic in its operation and convenient in its use.

A plow hitch was the result—a hitch that practically becomes an integral part of both plow and tractor, a hitch that stops the tractor when the plow encounters an obstacle that really requires a quick stop, but does not communicate every little jolt of stone or root displacement to the clutch making the going jerky and spasmodic. When a real obstruction is encountered, the resistance of the obstacle expands a tension spring, unlocking the coupler from the bracket on the plow beam, permitting the plow to stop and pull the chain to the clutch while the coupler slides forward on the beam following the tractor which stops before the coupler has time to slide more than two or three inches forward on the beam.

As the coupler does not come off the beam, it is always ready to be relocked by the simple process of backing the tractor after the obstruction has been removed from the path of the plow.

The immediate result of the invention of this hitch was the sale in the single community first referred to of 21 tractors the first month to farmers from whom it had been impossible to get orders for tractors before on account of

TURNER 2IN1 TIMER For All Ford Motors

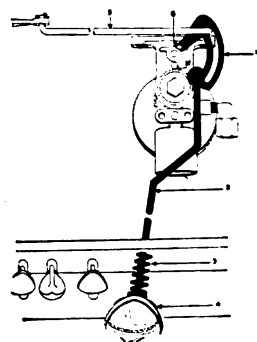


Five years of repeated tests have proven the TURNER TIMER to be a genuine quality product and a boon to every owner of Ford cars, trucks and tractors. It gives increased power, assures an easy start in any weather, lessens fouling of two front plugs, saves gasoline and stops motor "kicking." It is oil, grease and water proof. Requires no oiling and is easily installed. Furnished complete with "short proof" wiring assembly in metal conduit.

Eleven points of superior construction. Write today for information on this accessory that is breaking all previous sales records.

Price complete with
wiring assembly... **\$3.60**

Ford Foot Accelerator



The Turner Instant Foot Accelerator for Fords can be instantly installed by anyone. Permits positive and quick throttling when you need it. Gives use of both hands in driving. Has positive and direct connection with carburetor. Nothing to shake loose and rattle or cause lost motion. Large foot pedal and foot rest add to car appearance. Price complete... **\$1**

Spring Lubricator

Greatly increases riding qualities, stops squeaks and spring breakage and increases spring wear. Makes steering easier and saves tires. Only device that spreads spring leaves and lubricates at same time. For all cars. Price..... **\$2.50**

**TURNER
MANUFACTURING CO.**
KOKOMO, INDIANA

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WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

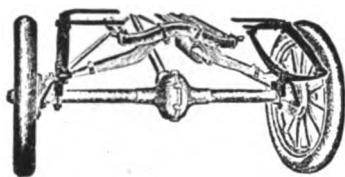
the difficulty occasioned by plowing their stony ground.

The hitch is made for use on Fordsons, Titans, Samsons and others.



Springs Convert Ford Into a Truck

AN auxiliary set of springs for converting the Ford chassis into a one-ton truck and also for reinforcing the regular Ford touring and delivery cars is on the market. It is claimed they will save 50 per cent of the tire cost and prevent breakage of rear axle, will equalize the load and save the body. These



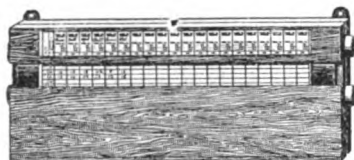
Springs Used to Convert Ford Passenger Car Into a Truck.

springs prevent the roll of the body in rounding corners which forces the end of the cross spring against the brake drum entirely eliminating spring action, causing the load to ride rigid on one tire. Action of this sort may ruin the rear tires, rear tires becoming crystalized by rigid loads which causes them to break. Bodies with overhang often sag in the rear, as regular cross spring is not designed to carry the excess load. These springs eliminate the cause, absorb the shock, and will make the car last longer and ride easier.



Milk Sheet Holder

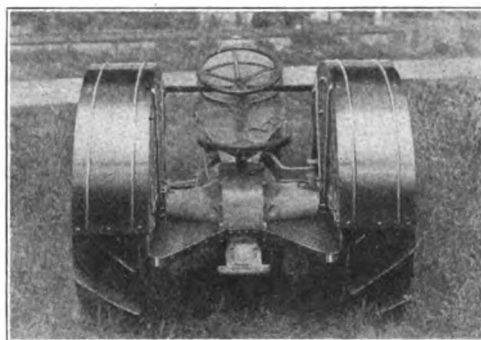
RECORDS of milk production enable the dairy herd owner to exactly determine which of his cows are paying a profit. The milk sheets are hung in



Handy Milk Sheet Holder.

M-C-F Fenders have strength Built In

All Steel
Construction
Defies
Vibration



Specially
Constructed
for
FORDSONS

Here are a few Reasons why Thousands are Buying

When all is said and done we know that the *MCF Fender* for the *FORDSON* is one that has warranted the demand. Its strength is far in advance of any fender made.

The spoked construction makes it rigid; no loosening up after a few days of tractor operation because the heavy steel U-Clamp is securely riveted to the reinforcement. They fit snugly around the rear axle housing. It's all in the construction. Even the sheet steel in the skirt and crown is heavy and the electric welding makes one solid piece that resists the vibration.

Everything in it is steel. No parts of wood to break or wear out. Even the rivets

that hold the parts in place will not pull away. They hold.

The platform tells a story in one glance. Low and roomy so one can drive while standing. Cut in so one can safely attach implements to the draw bar, and also give full turning radius to the Fordson.

An extra strong canopy is arranged for *MCF Fenders*. Frame is all steel, constructed in such a way that it is light in weight but rigid to the extreme.

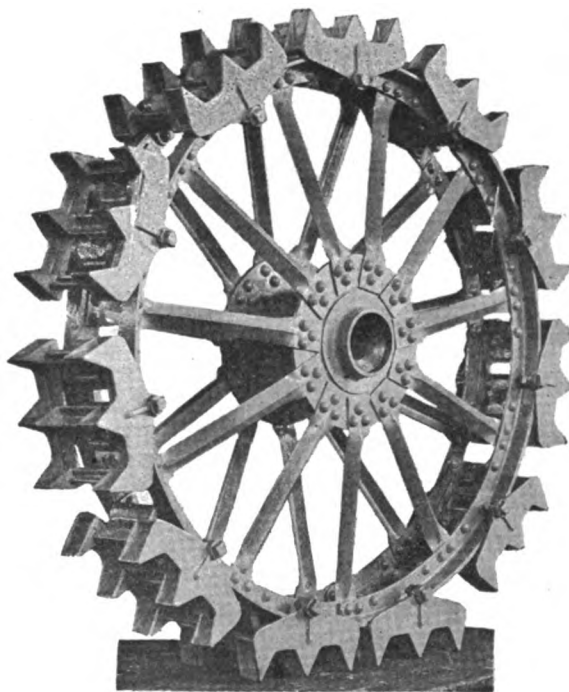
The net weight with the cut-in platform is 163 pounds and 70% of this is reinforcement. It shows what a lasting addition it is when installed on your Fordson.

Michigan Crown Fender Company

Ypsilanti

Dept. FF 2

Michigan



GRID IRON GRIPS

for the

FORDSON

or any other wheel tractor

INCREASE TRACTION

35%

BECAUSE THEY FORM

A TRACK ON WHICH TO RUN
Can be used the year round in any soil

The Grid-Iron-Grip Wheel Company

TOLEDO, OHIO

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

Alloy Steel on the Farm

CHAPTER V

Alloy Steel is supplied to builders of automobiles, trucks, tractors and farm implements in two principal forms:

Bars—Flat, round, square and special shapes.

Billets, Slabs or Blooms for forging.

From the Bars they make such parts as levers, connecting rods, tie rods, braces, small axles, small gears, pinions, springs, bolts, and many other parts.

From the Billets and heavier steel they forge drive shafts, cam shafts, transmission gears, and other parts too large or too irregular in shape to be formed from bar stock.

Builders of automobiles and trucks are using more alloy steel and less ordinary steel, year by year, because they have found it gives maximum strength and endurance, with minimum weight.

Tractor manufacturers, as a rule, are alert to the advantages of alloy steel in vital parts of their machines.

Why Not on Farm Implements?

Let us suggest to every reader of this column that he compare his *Implement* parts with parts on his Ford car or Fordson tractor that do the same kind of work or have to stand about the same kind of punishment. Ford machines are built almost wholly from alloy steel. This explains their great endurance in spite of their light weight.

As soon as farmers indicate that they want their farm machinery "built like Ford cars" the implement makers will give them *what* they want.

The general use of Alloy Steel by manufacturers of farm machinery will cut a big slice off the farmer's annual freight bill, reduce his outlay for repair parts, and save horse or gasoline power every day they are used, by reducing weight with same or greater strength.

Some makers of automobiles and motor trucks still stick to ordinary carbon steel, even in such a vital part as the springs—for cheapness' sake. They will change their policy just as soon as they become convinced that the consuming public appreciates the difference and demands the better steel.

Discuss this matter at your meetings. Talk it over; write the implement and automobile dealers. Ask your county agent to read this column each month, and also take up the matter with agricultural colleges and experiment stations. Also write the editors of the farm papers to which you subscribe and ask them to lend a hand.

Interstate Iron & Steel Co.
104 South Michigan Avenue
Chicago

the stable and after the milk of each cow is weighed the record is made. But keeping these records so that they may be prepared—the sheets kept clean and not torn—requires a holder. Shown in the illustration is a handy record-keeping outfit. It is a simple, durable roller cabinet and has a changeable card register as well as a ration memorandum, and the standard record sheets for a year's milk production. A slight turn of the roller wheels at either end of the cabinet brings the next day's record blanks ready for entry. When the sheet is filled up a new one for the following month can be inserted easily. The cabinet keeps the sheets clean; they cannot be torn by the wind, while the attendant has a solid surface on which to write.



Refrigerator That Hangs in the Well

UTILIZING the well that supplies the farm home with water as a refrigerator is one method that appeals to the housewife in the summer, especially if there is no ice available. This is accomplished by installing an "iceless" refrigerator, which in reality is a

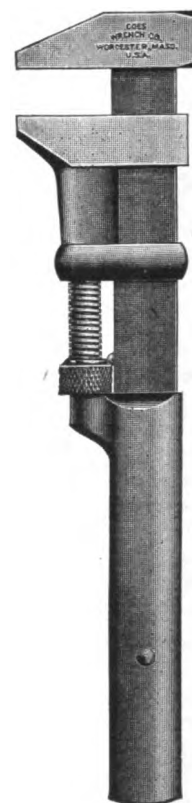


Refrigerator in the Well Keeps the Food Cool

frame on which slides an elevator similar to the dumbwaiter.

The top of the frame extends far enough above the well curb to permit the elevator containing shelves upon which the food is kept to be hauled completely out of the well. Thus it is a simple matter to place food on the lower or upper shelves or remove it as is desired. The elevator may be lowered to near the water line, where the temperature is cool even in the hottest of weather. When the elevator is lowered the well curb is closed with a

COES WRENCHES



On the modern farm where everything is being done by machinery, you will find that Coes Wrenches are helping to keep each and every machine in first class running order.

Coes Wrenches are built to give better service and last longer than any other wrench on the market.

*For sale by all good
dealers*

Coes Wrench Company

Worcester Massachusetts

cover, preventing dirt or water from falling upon it.

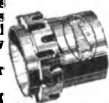
This method has been in use for some time and owners of this type of refrigerator have found it very efficient. As the well usually is near the kitchen door, it eliminates walking up and down cellar stairs, as well as providing a clean, cool place to store perishable foods. The refrigerator is made ready to install and is not expensive.



Proper Season for Culling

A GREAT deal of stress has been placed upon the fact that there is a right and a wrong season of the year for poultry culling. The right season is after the first real hot weather in the early summer and until the first cool weather in the fall, which comes usually in the first part of October. The wrong time of the year to cull is between October 1st and July 1st. About June 1st, at the University of Nebraska Agricultural College, a certain hen was examined and found to be in the condition stated below. Her comb was pale, she was losing feathers, her skin was yellow, the legs were well rounded, the abdomen depth, the distance between the end of the breast bone and the two pelvic bones, was only one and one-half fingers, when it should have been four or five; the pelvic bones were crooked and narrow. All of these indications, if existing in the middle of July, would have pointed out very definitely that the hen was a poor producer. But when this hen's trap nest record was investigated, it was found that she had laid 124 eggs since the first of November. Her poor condition was due to the fact that she had been broody for three weeks. Loss of many valuable hens is caused by untimely culling. Huxter cullers are glad to cull your hens any season of the year. In one case it was found that a professional culler had purchased all of the hens he had placed in confinement as culls. It transpired later that he had taken all of the laying hens for the price paid at the market for table stock.

Put A Set Of Turbulators On Your Car
The Turbulator is a marvelous device that creates 100% power from every gallon of gas you use. Cleans Plugs—prevents carbon. Effective in both new and old cars. Install them yourself in few moments—no special tools needed. Sold on fifteen days' trial—see your dealer. If he can't supply, write us. The Turbulator Corporation, Dept. K 2635 So. Michigan Ave. Chicago, Ill.



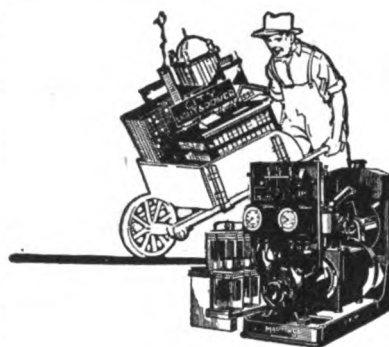
Yost Automatic Speed Control For Fordson

Simplest—Most Durable—Easiest Installed Speed Governor on Market
List \$10.00
Reg. Parts Discount to Ford Dealers
YOST AUTO CO. Sutton, Neb.

Install a MATTHEWS Full Automatic Plant on Your Farm

and you will have city light and power

In the city you press a button and get light or power instantly. With the MATTHEWS you can have the same dependable electrical service right on the farm. You don't need to start the plant—it starts itself. You don't need to stop it—it stops itself. Press a button anywhere and you get light or power instantly. You don't have to worry about your battery running down or being overcharged—for the MATTHEWS automatically keeps the battery properly charged at all times.



\$295 WAS \$395

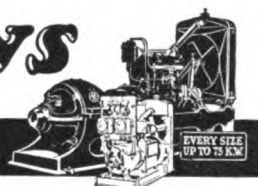
No matter what size you need, we have it—from 15 lights all the way up to 75 kilowatts. Prices, \$295 and up. If you need an electric light plant, you need a MATTHEWS.

Write for information today.

MATTHEWS ENGINEERING COMPANY
6 Monroe Street, Sandusky, O.

Matthews
Full Automatic

ELECTRIC LIGHT AND POWER



SECURITY AUTO LOCK

—The Original Loose Wheel Lock for Fords.

Made of hardened steel, 1/4 inch thick with skirt extending to bottom of gear case.

Steel protected lock cylinder.

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Our Readers Are Requested to Make Free Use of this Department for Questions and Answers on Modern Farming and Farm Improvements

Cool House for Hot Climates

Editor FARM MECHANICS:

I am sending you a rough sketch of a summer cool house which I built here in Arizona which is a hot country. This house will bring the temperature down from our torrid heat of sometimes as high as 110 to 130 degrees in summer. I guarantee that it will keep as cool as 45 to 50 degrees on the hottest days.

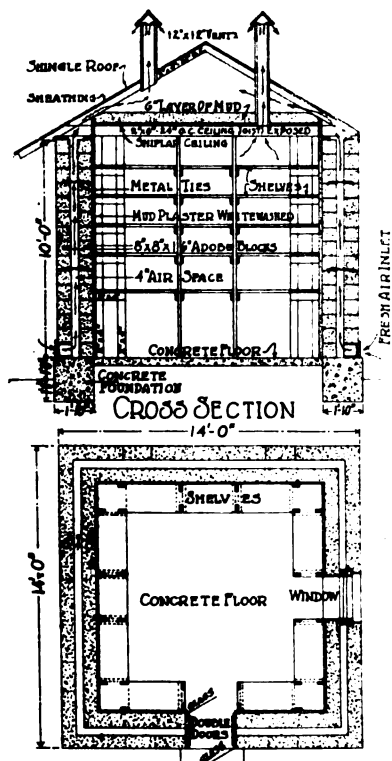
The foundations are rough concrete 22 inches wide by 2 inches high, one foot above ground level. Two walls made of adobes, each adobe 4 inches by 8 inches by 16 inches, walls about 10 feet high with screen ventilators next to the foundations on the outside walls. Every six courses to be tied to inner wall with steel straps, laid in adobe mud between the adobes, walls laid 4 inches apart,

cement floors laid inside, walls are plastered with adobe mud and whitened inside, with shelves constructed all around the walls. Ceiling joists 2 inches by 6 inches boarded on top with a layer of 6 inches of mud.

Two screen ventilators are made about 12 inches square, one to come into the room from the top of roof and the other for ventilation above the ceiling.

The ceiling on the under side of the joists is painted thoroly with about three coats. It has a hip roof that is shingled over all, and two glass doors at door opening and one window hung on weights. By keeping window open a little top and bottom and the doors closed all the time this cool house is indeed a wonder and not very expensive.

Milk, beef and vegetables can be kept for days without spoiling. In cold weather it can be closed up tight and nothing will mold or spoil.—B. G. PARKER, Wilcox, Ariz.



FLOOR PLAN OF ADOBE COOLER

Plan and Cross-Section of Adobe Cooling House for the Far South.

Horsepower of Water Wheels

To the Editor:

Will you please give me the necessary information for estimating the horsepower of water wheels?

What horsepower would it take to run a 110-volt d. c. generator up to 1,500 watts?—JOSEPH KLAMT, Howells, Neb.

Answer—The power which a water wheel will develop will depend upon the available fall in the stream or over a dam, and the amount of water available. For instance, 10-foot fall, 25 cubic feet of water per minute:

$$\text{H.P.} = \frac{25 \times 62.5 \times 10 \times .8}{33,000} = .38,$$

a little more than $\frac{1}{3}$ horsepower, in which

62.5 = weight of 1 cubic foot of water;
.8 = efficiency of water wheels in general;

33,000 = 1 horsepower per minute.

If the amount of water is measured in gallons you would multiply the num-

ber of gallons of water available by 8 instead of 62.5 for cubic feet, and use the same formula, 8 pounds being the approximate weight of a gallon of water. One horsepower is equal to 746 watts. Thus it would require about 2 horsepower to operate 1,500-watt generator; $746 \times 2 = 1,492$.—THE EDITOR.



How to Figure Water Pressure

To the Editor:

I am writing you for some information about pressure in water piping.

How much water pressure would there be from a $1\frac{3}{4}$ -inch pipe, 1,400 ft. long. 25 ft. fall, 152 or 200 barrel storage?

Would there be any more pressure on 2-inch pipe?—IRA H. SHURTZ, New Plymouth, Ohio.

Answer—The head or fall in feet multiplied by .4334 equals the pressure in pounds per square inch. Example: 25 feet head times .4334 = 10.83 pounds.

The pressure per square inch in a pipe depends entirely upon head or fall. The size of the pipe has nothing to do with it. However, the discharge from the 2-inch pipe would be greater than from the $1\frac{3}{4}$ -inch pipe because there would be less friction in the large pipe and also the large pipe would have a greater carrying capacity.

The amount of storage at the upper end of the pipe would not influence the pressure as long as the height remains the same.—THE EDITOR.



Boy Rebuilds Ford

Editor FARM MECHANICS:

I am sending you some snapshots of my rebuilt 1914 model Ford car. I did all the work myself, making the radiator shell, hood and cowl. In making the cowl I enlarged the dash and fastened the instrument board in place, bending the tin over and fastening with screws. In making the radiator shell the core was made by crimping strips of tin $\frac{1}{2}$ inch wide between two gear wheels and soldering together. On account of

the radiator shell the crank had to be lengthened about an inch in order to pass.

The windshield is from a Maxwell car and is set tilting with special brackets fastened to side of body. The top was shortened and lowered to fit the windshield, making the top much better proportioned to the body. It has new crown fenders and a 17-inch steer wheel. I also made a foot feed. On the instrument board are the ignition switch, light



The Ford After It Had Been Rebuilt by Victor Oman.

switch, carburetor adjustment, license plate; also the lamps were raised about six inches by welding on the brackets. The car was then given two coats of paint and one coat of clear varnish. The tapestry and upholstery got a coat of top dressing. The motor was also overhauled, putting in new lightweight pistons.

I assure you it looks as good as a new Ford and runs fine. The actual expense of rebuilding the body was \$46. I am no old mechanic but just a farmer boy 20 years old, doing this job in my spare time.—VICTOR OMAN, Brady, Nebr.



Helpful Magazine

I ENJOY FARM MECHANICS very much. Hardly an issue is received that does not contain something that is beneficial to me.—C. H. TAYLOR, Farm Manager, U. S. Veterans' Hosp., Perryville, Md.



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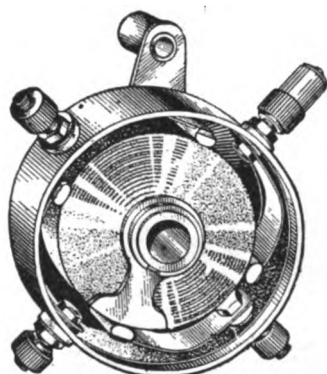
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Helps for the Housewife

MECHANICS in the HOME



Summer Fruits for Next Winter's Table

By DORIS W. McCRAY

COLD pack canning is the quickest and easiest, since all but the actual processing may be done in a cool place



The Cold Pack Method of Canning Is Quickest and Easiest.

rather than a hot cook stove. Everything will keep if properly handled.

When starting to can assemble all of the equipment that will be necessary, and if possible have the jars washed and fitted with rubbers and lids tested for leakage, leaving each lid beside its jar. Never use last year's rubbers. Test new ones by pinching between the fingers, and stretching to see if they spring back to the original diameter.

Use vegetables fresh from the garden, fruits just picked. Can nothing that is spoiled, over-ripe or old. The choice of the garden goes into cans for next January. Vegetables bought at a store may be a day old, hence may spoil. Buy only at a place where they handle fresh vegetables. Here the farm woman has a big advantage in being able to can the same day vegetables are picked. Grade according to age and size, processing the less ripe vegetables longer to insure thorough cooking. Cores and parings of fruits may be used for jelly, and tough ends of asparagus for soup, by processing much longer. Wash thoroly to remove a few of the bacteria.

Blanching is the first step in canning. It serves to loosen skins, shrink and make more flexible the vegetables so that

they can be packed more closely, and to start the flow of coloring matter which is at once arrested by the cold dip. Where blanching is called for, allow the full time, counting it while the water boils, since blanching affects the life of bacteria, giving them the first blow and killing a few of them. To omit blanching would mean the time for processing should be increased considerably. Blanch in a pressure cooker, or improvised steamer. Steam injures the volatile oils, the vitamins and mineral salts less than boiling water. Greens and small vegetables are tied in a cheesecloth bag, larger vegetables put in a wire basket. Using a pressure cooker, leave the petcock open. Blanch only enough at a time to fill a few jars.

Dip quickly into cold water to set the color and make more firm, then drain and pack at once into clean jars. Pack



All Vegetables Should Be Blanched Before Going Into the Cans.

closely, but do not crowd, since too close packing was found to be a cause of imperfect sterilization, resulting in spoilage. Use a spatula to push the pieces into place, and to let the air bubbles out. Vegetables look well cut into fancy shapes; fruits such as peaches should be arranged with the convex surface against the glass. It is wise to can some jars extra well for company. Cover vegetables with boiling water, and one teaspoon salt to each quart. Use syrup for fruits, either thin, medium or thick syrup of proportions of one part sugar to two of water, one to two, or two to one.

Half seal the jars, tightening screw tops, then giving half a turn backwards, leaving Lightning jars with the second wire clamp above the jar as well as the first one. Snap the clamp firmly on economy jars. Completely seal tin cans.

Put at once into the canner, which is already hot. If using a hot water bath, have the hot water cover the lids of the jars by one inch, see that it boils at once and is kept boiling steadily until the canning period is finished. Count time only while it is boiling. If using a condensed steamer, count time while the water boils. The pressure cooker is simpler and safest. Close petcock as soon as steam comes straight up; begin counting time when required pressure is reached, lowering flame to hold pressure uniform, or set on back of range. When time is up allow pressure to run down to zero by setting off stove, then remove jars.

When removing jars from canner, set on wooden table or cloths wrung out of hot water. Tighten covers, and cool away from drafts quite rapidly. If a rubber ring has bulged, remove and replace with good one, process again ten minutes.

Canning Fruits

Soft fruits as strawberries, blackberries, dewberries, sweet cherries, blueberries, peaches and apricots should be canned the same day as picked. Grade, rinse by placing in strainer and dipping in and out of water. Leaving in water makes them less firm. Cull, seed, stem, pack immediately into jars. Add thin syrup, one part sugar to two of water, brought to a boil. Partially seal, process



Putting the Fruit Into the Pressure Cooker to Be Processed.

in hot water bath 16 minutes, water-seal outfit 10 minutes, steam canner 16 minutes, steam pressure cooker, 5 pounds pressure, 6 to 8 minutes, depending upon ripeness. For sour berries, currants, gooseberries, sour cherries and cranberries, blanch in hot water one minute, use heavy syrup. Process the same length of time, except in pressure cooker, increase time to 10 minutes.

Hard fruit as apples, pears, pineapples and quinces are blanched $1\frac{1}{2}$ minutes. Use medium syrup, process 20 minutes in hot water bath or steam canner or 10 minutes at five pounds pressure.

Vegetables Canned Safely

The open kettle method is not safe for vegetables; use only cold pack method. Greens as swiss chard, spinach, asparagus, beet tops and kale are washed, blanched 15 minutes in steam, packed, seasoned with bacon or chipped beef, and sterilized 90 minutes in hot water bath or steamer, 60 minutes in water-seal, or 30 minutes at 20 pounds pressure.

Cabbage, brussels sprouts and cauliflower are canned the same as greens, increasing the time slightly if vegetable is large or old. Carrots, parsnips, beets, turnips and sweet potatoes are scalded to loosen the skin, cold dipped, scraped, packed, process 90 minutes in hot water bath or steamer, 75 minutes in water-seal, 60 minutes at 5 pounds pressure, or 35 minutes at 20 pounds pressure.

Cull, string and grade string beans, blanch in boiling water 2 to 5 minutes, sterilize in hot water bath or steamer 120 minutes, 60 minutes at 5 pounds pressure, or 40 minutes at 20 pounds pressure. Peas, okra and lima beans are processed the same length of time.

Sweet corn is blanched 5 to 15 minutes and cut from cob or canned as it is and packed. Sterilize 180 minutes in water bath or steamer, 60 minutes in water seal, 60 minutes at 5 pounds pressure, or 35 minutes at 20 pounds pressure. For vegetables as corn it is advisable to use the higher pressure if possible. A steam-pressure canner is on the market which carries only 5 pounds pressure. This is better than the hot water bath, but less desirable than pressure cooker.

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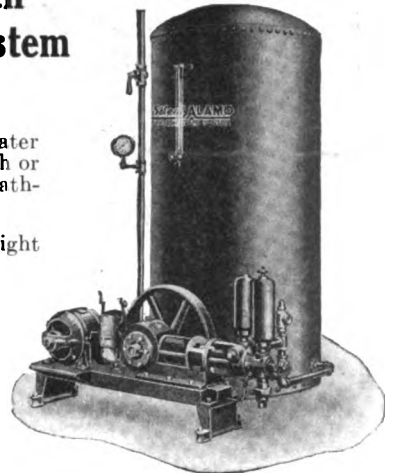
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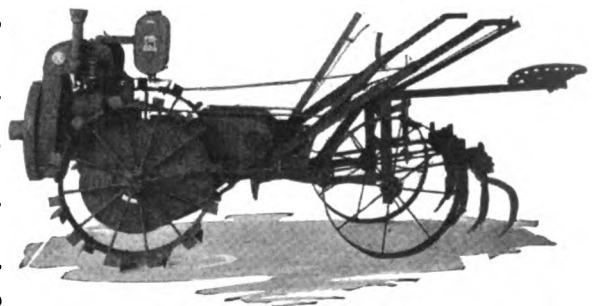
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Piston Slaps

TO THE EXPERT:

I have a Moline Universal, Model D, tractor. Please tell me the best way to regrind the cylinders. This tractor has been run only one year and not very hard. No great amount of work has been done with it. The piston slaps and one of them is scored a little. If I would get an oversize piston and grind the cylinder like you state in your journal for Fords it looks like it would cut the piston down.

I would like to do this work myself if I can. Is there a small machine made to regrind the cylinders by hand?—O. P. CRANMER, Summitville, Ind.

Answer—It would not seem that the cylinders of your tractor need regrinding as there should not be much wear in them in only one year's run. We would suggest that you only install oversize pistons. These can be had .005 of an inch over the standard size, and this should take up the play you speak of. If they will not enter the cylinders without sticking, use a mixture of oil and fine valve grinding paste, which is applied liberally to the sides of the piston, which is then worked up and down and revolved at the same time until the piston passes freely thru the cylinder. While there is some loss in the piston size by this method of lapping, it is very slight and does not affect the fit in any way. There is no small grinding machine on the market that will grind cylinders satisfactorily. The machines used to do this work being very large and costing from \$2,000 to \$3,000.—F. M. SERVICE.

Belt Power

TO THE EXPERT:

Would like to know which tractor would deliver the most belt power; one with a 4 by 5 motor and a 9-inch pulley running at motor speed of 1,000 R.P.M., or one with a 4 by 5¼ motor with a 16-inch pulley with a speed of between 375 and 400 R.P.M. with a motor speed of 1,000. Both engines have a speed of 1,000 R.P.M.—C. S. G.

Answer—the 16-inch belt pulley operating at a speed of 375 to 400 revolutions per minute would develop more

Mr. Service will answer free of charge for Farm Mechanics readers questions of general interest on Automotive troubles. As a "trouble shooter" he is probably the best equipped man in the industry, having diagnosed the ailments of thousands of automobiles, trucks and tractors. Put your troubles up to F. M. Service—Editor.

brake horsepower than the 9-inch pulley, tho the 9-inch pulley would have a rim speed of 7,169 feet more per minute.

Pulley Wheel Speed

TO THE EXPERT:

Please publish a rule to follow in finding the speed of a driven pulley, when the size of the driven pulley and the size and speed of the driving pulley are known. Also a rule to find the size of the driven pulley when the size and speed of the driving pulley are known and the speed that the driven pulley should go is known.—HAROLD CROW, Wapello, Iowa.

Answer—To find the speed of a driven pulley, when the size of it is known, and the size and speed of the driving pulley are known, multiply the diameter of the driving pulley by its speed and divide by the diameter of the driven pulley.

To find the size of the driven pulley when its speed and size, and speed of the driving pulley are known, multiply the diameter of the driving pulley by its speed and divide by the speed of the driven pulley.—F. M. SERVICE.

Buick Springs Stiff

TO THE EXPERT:

My Buick runs fine but rides so rough that there is no pleasure going out in it. Please tell me what to do?—J. S. CROCKETT, Tillman, S. C.

Answer—If you would remove your springs and clean the leaves carefully after which graphite them, we believe you would find the car would ride much better. Also if you do not carry a very heavy load you might try leaving out

the top leaf of each spring. This would increase the resiliency considerably and allow the springs to absorb more shock.—F. M. SERVICE.

Piston Rods Twisted

TO THE EXPERT:

Since you gave me such correct advice concerning my Avery tractor, I would like some on my 1917 Olds "37."

I had it rebored and new pistons fitted in a large establishment in Buffalo. After a few hundred miles when I began to run it above 25 miles per hour. I noticed a rattle. After a long search with no results, I had the rods lined up and five were found to be sprung, three of them quite badly. I put them back and after a few hundred miles the same rattle started to come back. I have run it the second summer now since having them straightened, and the rattle stays about the same. It is very annoying to say the least, and I would like to know the cause and what you would advise me to do.—HECTOR JOHNSON, Medina, N. Y.

Answer—It is very likely that the connecting rods that you found were badly sprung have become weakened and will not hold their proper alignment.

The knock is evidently the pistons slapping against the side of the cylinder walls, due to their uneven travel. We would suggest that you again take the rods out and replace them with new, the ones found to be sprung. At the same time take up all bearings and measure the pistons and cylinder walls for excessive wear, for if the motor has run two years in the condition you describe, the chances are that there will be enough play between the walls and pistons to cause a slap even if the rods are replaced. As a rule the twisted rods are caused by the mechanics raising them to lap in the new pistons and a very small twist when a piston sticks in the cylinder will cause the rod to spring.—F. M. SERVICE.

Studebaker Gears Slip

TO THE EXPERT:

Will you please tell me what causes the gears to slip out of high on our

Studebaker six, 1917 model, every time we go down hill or hit a rut? I had it to the garage last winter but it is just as bad as ever now. The mechanic said that some bearings needed tightening then. It worked fine for about a month. It only slips out on high gear. Do you think we need new gears?—HAROLD FOHLIN, Stratford, Iowa.

Answer—We would recommend that you have new high speed gears installed, as any repairs you make to the present ones will only be temporary.

After several years run the interlocking teeth of the high speed become worn slantingly and will cause the high speed to constantly slip back into neutral.—F. M. SERVICE.



Dodge Overheats

TO THE EXPERT:

How does it come that our Dodge, 1917 model engine, heats so much in the summer time? If we drive a stretch of 10 to 15 miles all the water boils out. And in the fall and winter we always drive with the fan belt off and it never boils.

We had new leak-proof piston rings installed two years back, and from that time it seems to heat so much. The water circulation works fine. Some cylinders seem to pump much oil. We have to clean the carbon out of the engine quite often, or otherwise it would knock when it gets warm. We change the oil quite often, too.—GUSTAVE FIECHTNER, Monango, N. D.

Answer—The excessive amount of carbon that gathers in the cylinders of your car is doubtless due to the rings you had installed not fitting properly. It may also be causing the heating trouble. We would recommend that you remove the cylinder head and measure the cylinder walls for size with a micrometer, as no doubt the cylinders are worn egg shape after five years' run and need, to be rebored or reground before you can fit a set of pistons or rings that would eliminate your trouble.

You might also be sure that the spark is not too far retarded, as this would cause the motor to heat up. The only other things that can cause heating are a loose fan driving belt, water circulating pump not working, or the impeller stripped from the shaft and poor circulation caused by sediment clogging the radiator or passages in the motor. Also the hose connections being so rotted on the inside as to stop up the inner diameter of the hose.—F. M. SERVICE.

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are made slightly over-diameter to meet varying cylinder conditions, and being of one piece construction are easy to install. The outer edges "lap in" more quickly, and conform more nearly to the contour of the cylinder wall, whether installed in new, reground or old cylinders, than any other piston ring—Burd Rings excel in quality and efficiency.

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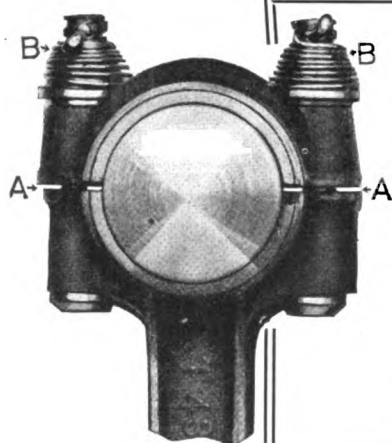
Radio Department

The Three Summertime Radio Imps

DON'T be surprised this summer if your new radio receiving set gives forth a first class imitation of boiler shop in full operation instead of an anticipated lecture on the culture of silk worms, says the Bureau of Standards of the Department of Commerce, in announcing that the "bad radio weather" season is now on.

According to the Bureau of Standards these summer disturbances, called "strays," "static," "atmospherics" and other names, are in evidence from about April 1 to October 1. Their seriousness varies from weak interference for brief intervals to a continuous succession of boiler shop noises which may last thruout the night.

A great deal of work has been done by radio engineers and scientists in an effort to reduce the interfering noise caused by these strays. At important government and commercial stations certain devices and methods are in use by means of which strays are considerably reduced, and it is made possible to obtain fairly reliable reception during the summer. The apparatus and methods now employed at such stations are usually too elaborate to be used at the ordinary amateur station. One method which the amateur will find helpful in reducing certain types of strays is the use instead of the usual elevated antenna, of a coil antenna and a more sensitive receiving set. A coil antenna may be constructed by winding a suitable number of turns of wire with proper spacing on a square wooden frame about 4 feet square. Certain types of strays seem to come from a particular direction. Many strays, however, have no directional properties, including those due to local electric storms. The coil antenna has the property of receiving a stronger signal when pointed in the direction from which the signal is approaching and receiving only a weak signal when pointed at right angles in that direction. Thus by rotating a coil antenna to the proper position the directional types of strays can be greatly reduced and a better ratio of signal to strays will be obtained. The ordinary elevated antenna does not possess marked directional properties, and therefore cannot be used like the coil antenna for stray elimination. However, the strength of signal picked up by a coil antenna is much smaller than the strength of signal picked up by the ordinary elevated antenna, and good results should not be expected from a coil antenna unless three or more stages of amplification are used.



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Anyone can do it. Simplest on the market. Retail at \$3.00 per set of 8. For the Fordson \$3.50.

Garages—Repairmen

Write for wholesale prices.

MOHAWK SALES CO. (Not Inc.)
21 E. Van Buren St. Chicago, Ill.

'DURO' WATER SYSTEMS

EQUAL TO CITY WATER SERVICE

2c a day and a "DURO" will pump water automatically from shallow or deep wells, springs, streams or lakes, and put the water under pressure available at the turn of a faucet throughout the house and about your farm.

"DURO" WATER SYSTEMS will modernize your home and pay for themselves in time, labor and money saved.

Write for Catalog J-33, containing full particulars

THE DURO PUMP & MFG. CO., Dayton, Ohio

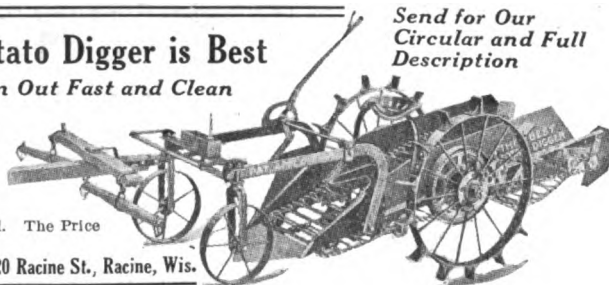
The "Best" Potato Digger is Best

—It Turns Them Out Fast and Clean

Sturdily built, mostly of steel, the Best is made for a lifetime of satisfactory service. Two good horses can easily pull it. Shovel 22½ inches wide can be raised and lowered from the operator's seat. Special attachment for stony ground.

The Price

is Right.
The Wabers Mfg. Co., 1720 Racine St., Racine, Wis.



Send for Our Circular and Full Description

CUSHMAN

SAVES A TEAM

4 H. P. Cushman on a Binder. Same Engine Does All Other Farm Work.

Saves two horses, saves grain, saves time and saves the binder. 2 horses easily pull 8-ft. binder; engine drives machinery.

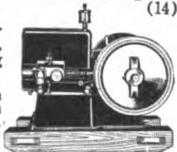
Saves the Crop

in a wet season because slipping of bull wheel or slowing up of team does not stop the sickle, and it never clogs. You can cut wet grain same as dry.

New 1½ H. P. Horizontal design, hopper-cooled, fewer moving parts and less exposed.

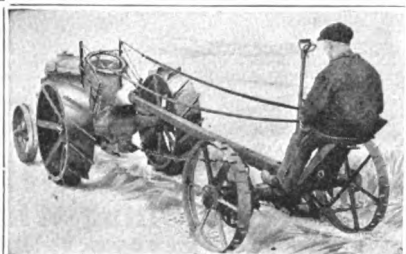
Cushman Engines are built in sizes 1½ to 20 H. P. Book on Light Weight Engines sent free.

CUSHMAN MOTOR WORKS
981 N. 21st St. Lincoln, Neb.



1 1/2 H. P.

Drive Fordson Like a Team



Complete control of tractor from seat implement with

Cole Line Drive

Write for reduced prices, descriptive folder and special offer.

Ask about our \$10 Governor and Kil-Nok Connecting Rod Bearing Adjusters.

COLE MFG. COMPANY

1237 Central Ave., Minneapolis, Minn.

Some relief can also be obtained by persons having good amplifiers by using a "ground antenna." This is a long insulated wire run in a shallow trench or on the surface of the ground. The ground wire should be run in the direction of the station from which the most signals are to be received, and should preferably be several hundred feet long.



The Farm Entrance

By CHESLA C. SHERLOCK

IT is not always the naked land that determines the valuation of a place, nor the amount of money expended in improvements. Very often it is the distinctive features which have been added which distinguish the farm home from other places.

A farm entrance at once commands attention. If it is properly done, it will add value and distinction to any farm home. It need not be expensive and massive or elaborate. The one shown in the illustration is very simple, yet it adds many times the cost to the value and appearance of the place.

It consists simply of stone pillars made from stones picked up in the roadsides



A Good Looking Farm Entrance.

and on the farm. * These stones were carefully fitted so as to make a pillar of uniform size. Smaller pillars are used for the sidewalk entrance.

This simple little addition to the surroundings absolutely change the appearance of the place. They set it off; give it distinction and value. And it is just such distinctive features as these pillars which have given this farm an added value. The point is that it took only a little time, and some cement to do the trick.



Splendid Magazine

FARM MECHANICS is splendid. I have enjoyed "Notable Farms in Picture and Story" very much. I find many good ideas in "Handy Andy's Department."—F. C. RYERSON, Burt, Iowa.



A STRING thru a hole at the back of the children's rubbers tied over the instep helps a lot in mud.

Fairfax Blood

YOUR herd will gain a better reputation and bring increased profits to you if it is headed by a Fairfax bull. Add that touch of character to your herd.

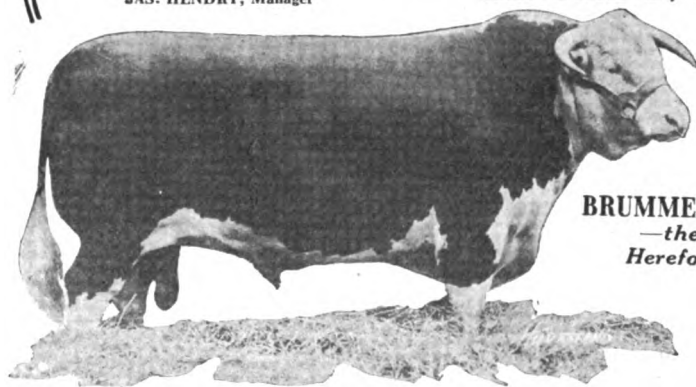
Owners are finding the descendants of Perfection Fairfax are bringing increased demand for Fairfax blood. They appreciate the quality of uniform stock.

Sales List and Information will be sent you on request

ORCHARD LAKE STOCK FARM

WARREN T. McCRAY, Prop.
JAS. HENDRY, Manager

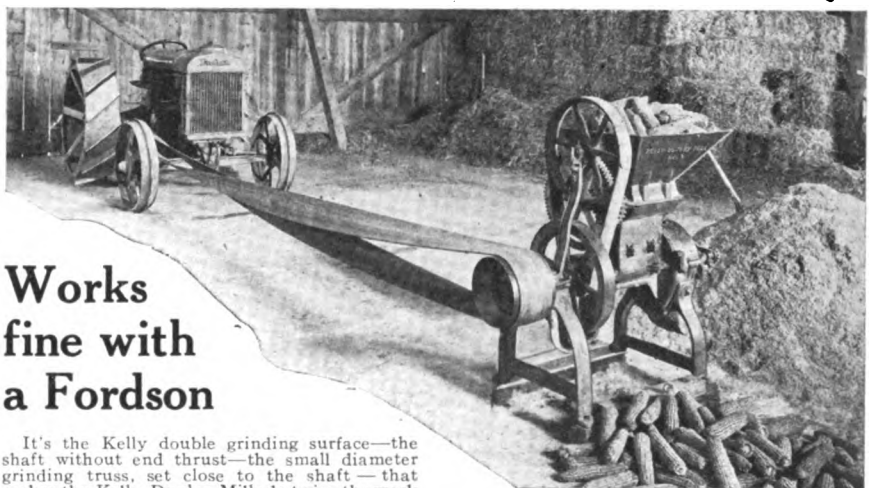
KENTLAND, IND.



BRUMMEL FAIRFAX
—the Great
Hereford Sire.

KELLY-DUPLEX

COMBINATION CUTTER AND GRINDING MILL



Works
fine with
a Fordson

It's the Kelly double grinding surface—the shaft without end thrust—the small diameter grinding truss, set close to the shaft—that makes the Kelly-Duplex Mills do twice the work with less power than other mills of its size.

Grinds ear corn and cob with or without husks. All kinds of grain, alfalfa, soy beans with vines, kaffir corn or milo maize in the head.

Built in all sizes and types.

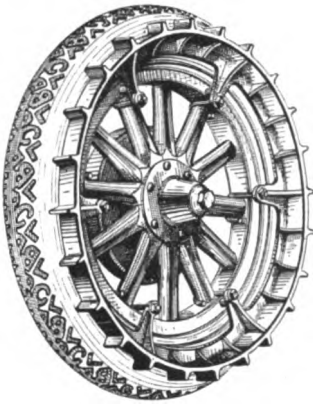
FORD DEALERS

Here is an ideal type of grinder for use with the Fordson. If you are not already familiar with the Kelly write us at once for price and territory.

Write for Illustrated Booklet on the Kelly and Its Uses

THE DUPLEX MILL & MANUFACTURING CO.
Box 342
SPRINGFIELD, OHIO

100% Traction



Our circular shows details of various designs for all makes of wheels and special reinforced, made to order rims.

No more delays for bad roads. Equip your truck (solid or pneumatic tires) with FOLEY TRACTION-RIMS and go anywhere, road or no road.

These rims are made from electric steel and will fit any make of truck wheel and can be attached or detached in twenty minutes.

Send for circular and prices today.

**FOLEY
TRACTION-RIM CO.**
109-111 So. Tenth St. Minneapolis, Minn.

Farm Facts Condensed Items of Interesting Information

American cheese has invaded Switzerland. During the last three years the products of American cheese manufacturers have invaded the Swiss markets, and the American product has found a large sale in the home of the famous Swiss cheese. This invasion is due to the greatly improved quality of the American cheese, American Consul Murphy at Lucerne says.

Wheat has replaced the vegetables commonly grown in backyard gardens in Austria and other European countries. The substitution has been ordered by the government.

Oranges, 2 cents a dozen; grapefruit, 10 cents a dozen; pineapples, 5 cents each and bananas, five for 1 cent are the prices of fruit in Haiti.

Gas-filled young chickens may be relieved by pricking their skins with a needle. Plenty of charcoal will eliminate the trouble.

Roosters are of no value to the laying flock after the hatching season is over. Sell them or eat them, and market infertile eggs which keep better in summer.

Export of agricultural products now is about double the prewar average and equals that of last year. The prewar average was \$59,000,000 and the present average over \$100,000,000.

Foot and mouth disease among livestock again is feared by experts at the New York State Agricultural College. Warning against using straw that has been used to pack imported crockery is issued; also that watch be kept on animals where immigrant labor is employed.

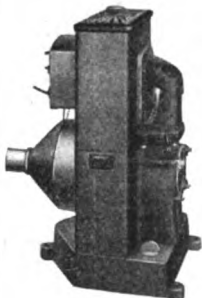
Ohio farmers have found that corn drilled averages a bushel or more to the acre than that planted in hills.

Five times as much labor is required to produce an acre of silage corn than an acre of hay.

Tractors in Greece now number more than 500, more than half of which are of American make. There are 360 tractors in Brazil.

American tractors, harrows and plows have been purchased by Chinese capitalists who will undertake to grow peanuts on a 13,000-acre plantation in the province of Hankow. This experiment is looked upon as indicative of a new order of things in that Oriental country.

Rural pastors and social workers are going to study agriculture and



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INDIVIDUAL ELECTRIC SYSTEMS

Simple—Durable—Economical

Only 3 Moving Parts—1¼ K.W. Generator—3 H.P. Engine—5-Year-Guaranteed Battery—Power Pulley

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MANUFACTURERS
GRAFTON, WISCONSIN

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We announce our latest catalog now ready to be forwarded to you. Our prices are reduced. The catalog illustrates our line of—


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Feed Cutters, Hand and Power
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Silo Fillers
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Pump Jacks
Corn Shellers, Hand and Power
Saw Frames, Wood and Pole
Mandrel sets
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Write for catalog and our reduced prices

FREEMAN MANUFACTURING COMPANY
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When You Buy DISCS or Disc Tools

Look for  the Stamp of X-tra Quality Galesburg Discs cut keener, scour cleaner and hold their edge better. Used by almost all the leading Implement Makers of America.

Galesburg Coultter Disc Co. Galesburg, Illinois

GALESBURG
Discs, Coultter Blades, Furrow Wheels



Discs for all Implements

SPRINGFIELD CARBINE \$3.50

Made by U. S. Govt.



Cal. 45 Breech Loading

First Class Condition, 41 inches long, weight 7 lbs., \$3.50. Then for \$3 more you may have a smooth bore barrel to shoot shot. This makes a wonderful combination. The smooth barrel can be interchanged by any one in 5 minutes. Millions of Bird or Ball Shot cartridges, 3 cents each. Send for catalog.

W. STOKES KIRK, 1627 N. 10th STREET
Dept. 66 Philadelphia, Pa.

rural social problems at the University of Wisconsin in July.

To sterilize soil so that no vegetation will grow use arsenite or arsenate of soda, at the rate of one pound dissolved in 5 to 10 gallons of water. These materials are poisonous and should be used carefully.

Lambs comprise more than three-fourths of the sheep that go to market. Pure-bred lambs weigh 10 pounds more at the age of five months and bring as much as \$4 more per hundred pounds.

Sweet clover pastures should be kept cropped to six or eight inches, as a rank growth is woody and coarse in flavor. Four or five head of livestock to the acre will keep the growth down.

World wheat stocks are lower than in several years, while the consumption of Europe is growing greater. With Russia out of the export trade, the North American wheat is in a relatively strong position.

Bred sows should gain from 75 to 80 pounds during the summer and fall before they farrow. During the first ten weeks after breeding, sows should have enough good forage to make grain feeds unnecessary.

Manure piled outdoors thru the summer waiting for some special crop is more than likely to lose a large part of its fertilizing value before it is used. Specialists advise putting it on any crop or permanent pasture as soon as possible, rather than leaving it outdoors in piles, where experiments show it loses one-third to two-thirds of its value in three to five warm months.



Always on the Job

YOU are always on the job with the things that pertain to farmers' homes. Just now your radio articles are just the thing. I was interested in the Fordson tractor articles on overhauling in the March and April issues. I am a Ford farmer, having a Sedan, Truck and Tractor.—ANTON SUTTER, JR., Salisbury, Mo.

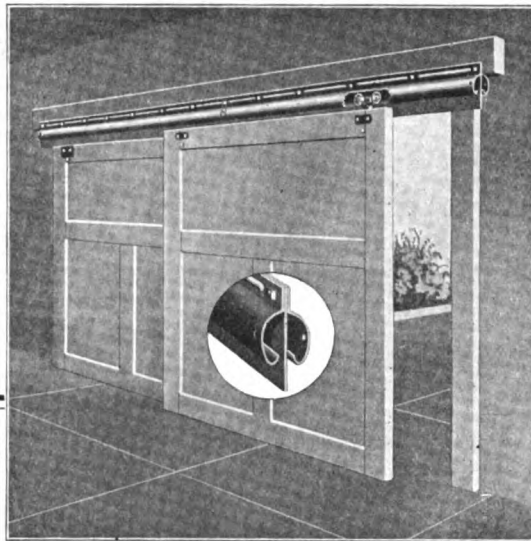


LOOKING over the tile drain outlets and cleaning out those that need it is a good summer job that may save money later.

WATER DIRECT FROM THE WELL



Milwaukee Air Power Pump Co.
Milwaukee, Wis.



WRITE FOR
A CATALOG
TODAY

GARAGE HARDWARE OF MERIT

is the kind you want on your garage. Durable and the kind that gives smooth service as long as your garage lasts. Such is Frantz Garage Hardware. We've been specialists in satisfying these demands, for durable, smooth-running, attractive, yet economical, garage hardware, for so long that we can offer the best hardware for your particular need.

Get our booklet and prices before buying.

FRANTZ MANUFACTURING CO.
STERLING, ILLINOIS



FOR THE 101 THINGS THAT NEED TO BE DONE AROUND THE FARM

YOU can make almost anything you want with the Parks Four-in-One Woodworker in short order. Hog troughs, bins, poultry houses, corn cribs. You can finish your timber, match silo staves, cut barn patterns, build a garage. It makes spare time go four times as far as when you do the work by hand.

The Parks Four-in-One stands up to the hardest work. Built of heavy angle steel, stoutly reinforced. Smooth running, easily adjustable, portable. Saws material up to 7 in. thick. 22-inch band saw cuts to center of 44-inch circle. Strong — rigid — Price \$225.00. Guaranteed for 10 years.

Combines Circular, Rip and Cross-Cut Saw; Band Saw; 12-in. Jointer and Boring Machine. 2½—4 H. P. 550 R. P. M. Tight and loose drive pulleys, 10-in. diam. by 4 in. face. Adjustable sliding table.

THE PARKS BALL BEARING MACHINE COMPANY

4127 Langland St., Cincinnati, O.

Canadian Factory: 200 Notre Dame East, Montreal, Canada

Write for new catalog B

PARKS



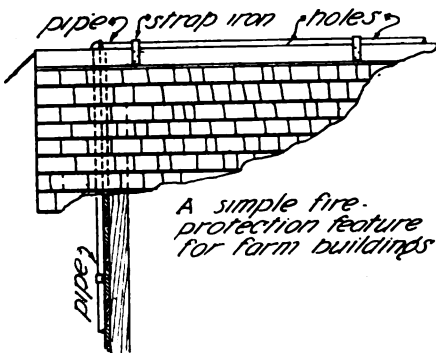
HANDY ANDY'S DEPARTMENT

WHERE FARM MECHANICS READERS CAN PASS ALONG GOOD, TESTED IDEAS.

Fire Sprinkler for Farm Buildings

HERE is a simple protective feature which can be added at a nominal cost to any of the farm buildings, including the residence. It consists of a pipe line of small diameter extended along the ridge. The horizontal pipe contains small holes at 12-inch intervals thru which the water issues upon the opening of a valve below. Its chief merit lies in the fact that practically the whole of the roof can be washed off by simply turning the valve. To maintain sufficient pressure thru the holes over a long ridge, the pipe must be of sufficient size.

The drawing shows how this pipe may be attached to a barn ridge. The pipe is run up the end, thru a hole



A Perforated Pipe Attached to Water Pressure System Provides Fire Protection.

and onto the ridge as shown. Light pieces of tin will hold it in place. The holes are drilled in rows, one on each side, and not diametrically opposite, but close to the ridge so that the water will immediately strike the roof and flow down.

This would be especially handy for residences, as it would practically eliminate roof fires. To prevent freezing in winter, a small drain hole is drilled in the supply pipe, just above the valve, but it should be frost-safe.

Of course, in using this system, suf-

\$1 for an Idea

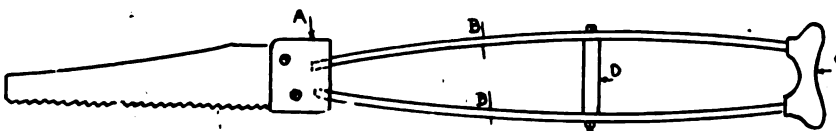
I, Handy Andy, am famous, because I am found on nearly every farm. When some little thing that would make farm work easier pops into my head I get to work and build it. Farm Mechanics has asked me to pass my ideas along, so as to help everyone do things more easily. I want to pass your ideas along, too. Send them to me, using not more than 200 words, and a pencil sketch or photograph to illustrate it. I will send you \$1 for every idea accepted. Address your letter to me.

HANDY ANDY,
Care Farm Mechanics,
1827 Prairie Ave., Chicago.

ficient pressure must be available to carry water to the required height.—D. R. V. H.

A Long Handled Pruning Saw

IF a long handle is fitted to the common small saw used for pruning trees, one can do a lot more work from the ground, and even when working on a ladder the "radius of operation" is much increased. The drawing shows a good way to make this handle. Part of an old crutch is just the thing if available; if not, the part is not hard to construct. First remove the regular handle of the saw, and put in its place a block of hardwood (A); (BB) are two strips of hardwood about $5\frac{1}{8}$ by 1 inch and 3 or 4 feet long. One pair of ends are let into the block (A) as shown and fastened with glue and screws. The other ends are let in to another piece of hardwood (C), shaped to a handle. Another handle is placed at (D). This is merely a short piece of round stock

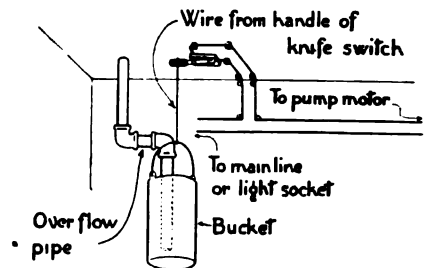


A Saw with Extension Handle Is a Handy Tool When Pruning the Trees.

(such as an old shovel handle) with a $\frac{1}{4}$ -inch hole bored lengthwise thru its center. A bolt clamps it in place between the parts (BB).—JAMES P. LEWIS, Golden, Colo.

Automatic Shutoff for Water Tank

FOR any one using a motor or gas engine to pump water to a supply tank a handy device can be made to shut off the engine or motor when the tank is full. Place a knife switch so that a bucket hung from it will come



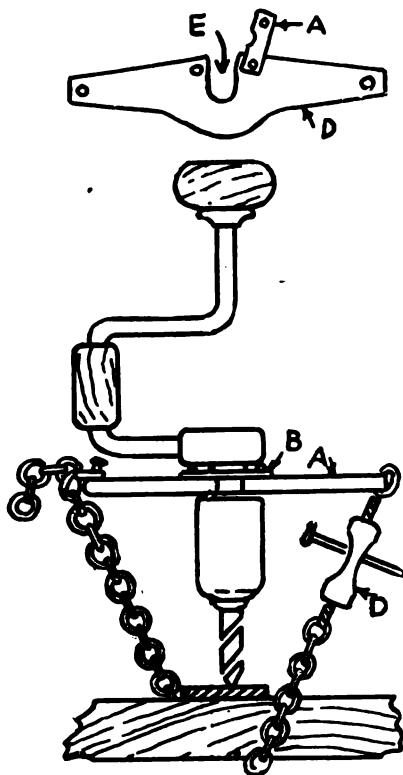
Device That Automatically Shuts Off the Pump.

under the overflow pipe. Then when the tank is full the water will come down the overflow pipe and run into the bucket. The weight of the water in the bucket will pull the knife switch open, shutting off the motor or gas engine. This arrangement may be used in many different forms, owing to the place and arrangement of the overflow pipe.—Donald C. Hill, Corning, Iowa.

Drilling With a Brace

THE hardest part about drilling metal with a brace and drill is to apply enough pressure to make the drill take hold. The simple attachment shown herewith makes the process much easier. Out of a piece of $\frac{1}{8}$ -inch strap iron 6 or 8 inches long cut a piece to the shape shown at (A). Use a hacksaw and file, finishing the slot (E) with a round file. This slot is just large enough to slip over the brace rod as shown just above the chuck. A little lever (B) keeps it from slipping out of place when in use. At each end of (A) a hole is drilled to which a small chain, flexible wire or rope can be fastened. In the chain at (D) a small turnbuckle is inserted. To

use, the chain is passed around the support on which the metal to be drilled is placed, the slack taken up and the chain connected to (A). Pressure is applied to the work by turning up the turnbuckle with a small lever or wrench. If the



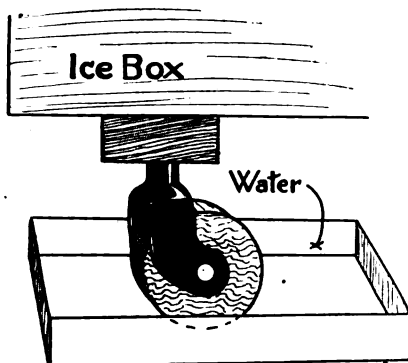
To Use Bit and Brace for Boring Metal.

metal being drilled is thick, the turnbuckle should be loosened slightly from time to time and the chain adjusted, since it is only taken up on one side. This could be obviated by using a turnbuckle on each side of the chain and adjusting alternately. Use plenty of oil on slot or bearing (E).—JAMES P. LEWIS, Golden, Colo.



Keeps Out the Ants

A SIMPLE method of preventing ants from climbing the legs of an ice box



Tobacco Tin Cover

Device to Keep the Ants Out of the Refrigerator

PERMANENT

100-YEAR CONCRETE PRODUCTS
LAST AS LONG AS YOUR FARM

THINK



This crib protects the grain from fire, weather, rats and mold and will prove less expensive than wood. It gives everlasting service and satisfaction.

The Only Concrete Post in the World

into which staples can be driven and THEY HOLD.

This 100-year staple post will not burn, decay, or split, makes a strong and beautiful fence that is absolutely permanent and inexpensive.

We will furnish post or rent mold equipment with complete instructions how to make them. You can make them and prove their expense less than any other good post.

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CHICAGO, ILL.

— as the days grow longer

you may have a few free hours that easily could be turned into extra dollars. By interesting your friends and neighbors in FARM MECHANICS you can earn a tidy sum each month. No premiums or prizes, but actual cash profits for you. Our plan is liberal—and you know Farm Mechanics! For further information address P. N. R., 1827 Prairie Ave., Chicago, Ill.



USE YOUR FORD FOR Farm Power

Attach a BB Auto Power Pulley to its rear wheel and pump water, grind feed, saw wood, shell corn, fill silo, separate cream, run grindstone, bale hay, run washing machine and do other hard power jobs ANYWHERE on your FARM. Make a regular power plant of your car—double its value.

BB AUTO POWER PULLEY

Quickly attached to either rear wheel by Special Hub Cap furnished free with pulley—put on or taken off in a minute. STRONGLY BUILT—lasts a lifetime but pays for itself in a day. Can't wear out—can't damage car. Price for Ford, \$5.95; other cars, \$7.65. SATISFACTION GUARANTEED. Send check today or write for Free folder.

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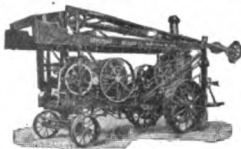
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FREE REPAIR BOOK**

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**SMOOTH-ON
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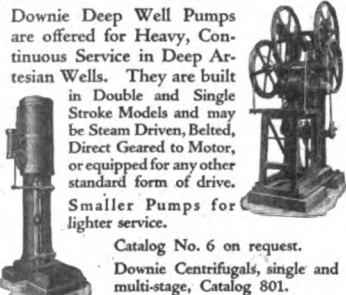
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WELL DRILLS



A Catalog and price list of Well Drilling Rigs and Equipment, Bits, Stems, Jars, Rope Sockets, Fishing Tools, Etc., will be sent on request.

Keystone Well Drills are dependable tools for Water, Oil and Gas Wells, Mineral Prospecting, Blast Hole Drilling. Portable and Traction Drills for all depths, 25 to 3000 ft.—Steam, Gas, Motor or Electric Power.

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DEEP WELL PUMPS



Downie Deep Well Pumps are offered for Heavy, Continuous Service in Deep Artesian Wells. They are built in Double and Single Stroke Models and may be Steam Driven, Belted, Direct Geared to Motor, or equipped for any other standard form of drive. Smaller Pumps for lighter service.

Catalog No. 6 on request.
Downie Centrifugals, single and multi-stage, Catalog 801.

Keystone Driller Company
170 Broadway, New York, 10006
Beaver Falls, Pa.

National Fresh Water Systems



The air operated system that delivers the water fresh from the well direct to the faucets without the use of water storage tanks.

Reliable—Economical

Write for Catalog

National Utilities Corporation
Milwaukee, Wisconsin

and getting inside is shown in the accompanying illustration. Each leg of the box is set in a shallow pan of water. Ants climbing up the sides will either be stopped by the water or get drowned. We have used this method in our home where the ice box sits in the summer kitchen during hot weather and have never been bothered by the insects getting into the food.—L. A. HARDENBROOK, Raymond, Minn.

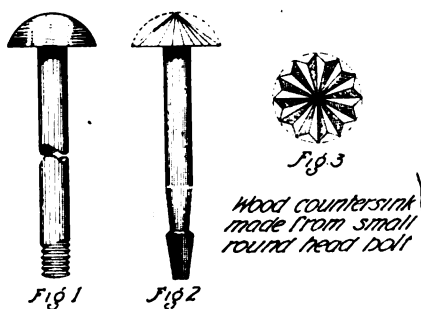


A Homemade Countersink

DURING some alterations in one of the rooms at home it was necessary to drive about four dozen wood screws. The wood was oak and since exposed to view, it was expedient to use as much care as possible.

Holes were first drilled with a small breast drill and then the holes reamed out with a countersink which was made as shown in the drawing, there being none at hand.

A carriage bolt five inches long and



Countersink Made of a Bolt.

three-sixteenths of an inch in diameter was used (Fig. 1). The head was held against the emery, being turned slowly meanwhile, until a cone was formed. The bolt was then clamped in the vise and with a three-cornered file, this cone grooved as shown Fig. 2. Fig. 3 shows the top view of the head after it had been finished. The shank of the bolt was also ground down and the end squared to fit into a hand brace. This tool did the work all right, but the iron was too soft for all purposes.

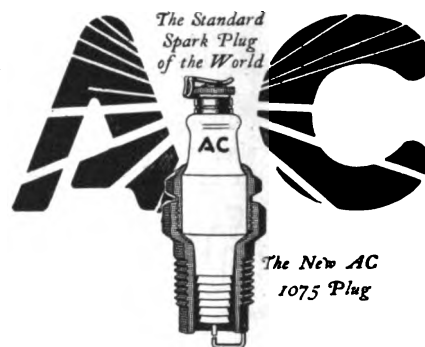
Since that time we have made another on the same pattern, using a steel bolt and this holds its edge for a long time.—DALE R. VANHORN.



Emptying Jug and Bottles

WHENEVER it is necessary to empty liquid from a large jug or bottle, it will always sputter and gurggle, splashing a goodly portion of the contents outside the utensil it is supposed to be poured into, and usually it takes a very long time before the vessel is finally emptied.

This can be overcome by taking an



Why You Should Change the Plugs in Your Ford Engine

AC 1075 Has These Big Features

- 1—Patented wire terminal clip so that you can remove and attach Ford terminal instantly, without stopping engine, for testing plug or coil.
- 2—New electrode design, forming natural drain so that no oil can lodge in spark gap.
- 3—Plug comes apart so that porcelains accidentally broken can be replaced.
- 4—Knife-edged Carbon Proof porcelain which burns off soot and carbon as fast as they form.

Most engine troubles come from worn-out or incorrectly designed spark plugs.

Install a set of AC 1075 Plugs and see what a difference it makes in performance.

If your Ford dealer will not supply you, any other good dealer will meet your needs.

AC Spark Plug Company, FLINT, Michigan

Make Your TRACTOR SELF-STOPPING

with the

Tractor Stop

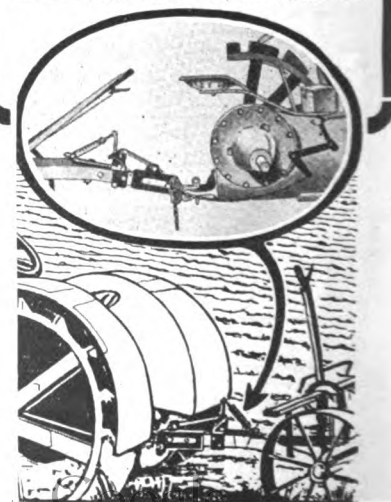
PLOW HITCH
\$15.50

Write for literature and name of nearest dealer

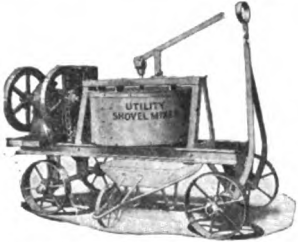
Makes Plowing Safe and Easy

Dealers: This is a "red hot" Seller—Write for Discounts

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MEILI-BLUMBERG CO., New Holstein, Wis.



Save Money! Do Your Own Concrete Work



UTILITY SHOVEL MIXER

Don't put off needed improvements. The UTILITY SHOVEL MIXER and UTILITY MOULDS for making all kinds of concrete products completely solve the high cost of building problem.

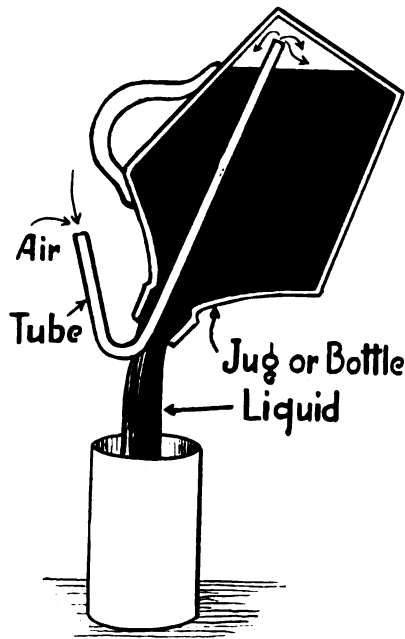
Great opportunity to get into big money making business.

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Make Money! Do Your Neighbors Work

L-shaped tube and inserting the long limb of the L thru the neck of the bottle into the air space beyond the liquid. The finger should be kept on the open end of the tube while passing it thru the



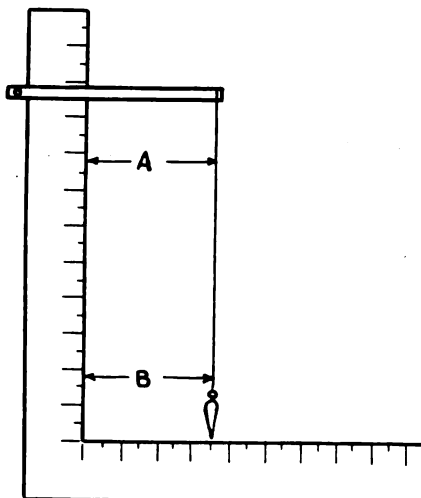
Showing How a Bottle May Be Quickly Emptied

liquid in order to keep it full of air and exclude the liquid. The air, entering by this tube will cause the liquid to flow out in an even stream. In an emergency a sheet of paper rolled around a pencil will form a paper tube that will answer the purpose.—Victor Pomranke, Kiel, Wis.



Square as a Level

A CARPENTER'S steel square may be used as a level by attaching to it a plumb bob in the manner shown in the drawing. Fasten the plumb bob to



Showing How the Carpenter's Square May Be Used as a Level.

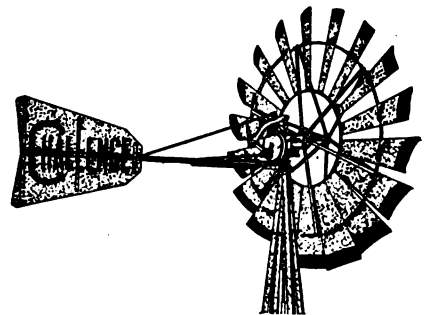
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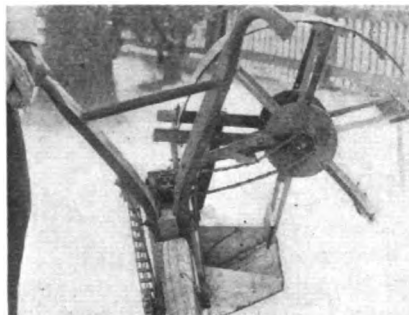
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the leg of the square by a clamp. When the plumb bob hangs so that the distance at "A" is the same as at "B" the surface is level. The clamp may be made by sawing a slot out of a piece of wood and fastening it with a small nail or a screw.—**AUGUST WINSKY, La Crescent, Minn.**

Boll Weevil Catcher

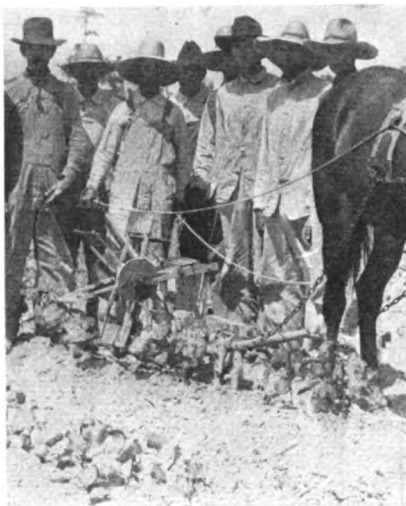
CATCHING and destroying the boll weevil has at last been solved for



Close Up View of the Boll Weevil Catcher.

the benefit of the South by a Southern farmer.

The catcher is attached to a plow—a paddle wheel knocking the boll weevil or other insects from the cotton plant into the pan, under the paddle wheel,



Using the Boll Weevil Catcher in the Field.

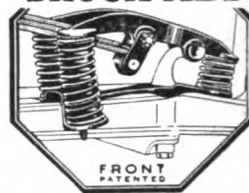
the pan being filled with kerosene, which immediately kills the boll weevils.

A gallon of kerosene will destroy all the boll weevils and other insects on about eight acres of cotton.—**O. G.**

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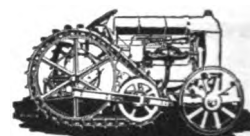
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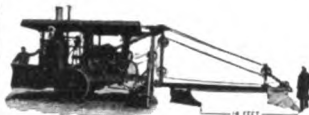
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when it is laid on a flat surface the wheel rests on the rim. The spokes clear the ground a few inches, as does also the hub. Take a molasses or vinegar barrel, or a sugar barrel will do. and remove both ends. Set the barrel on end over the wheel and mark where the spokes touch the edge. Saw V-shaped notches about 2½ inches deep where the spokes touch. This will make the feeder



The Barrel Self-Feeder Set on Mower Wheel.

about right for shelled corn, if tankage is to be fed thru it make the notches a trifle deeper. Place a common wagon end-gate rod thru the hub of the wheel from the bottom end up thru the barrel. Nail a cleat on the head of the barrel and bore a half-inch hole thru the center of the head. After filling the barrel with feed, slip the head over the end-gate rod and screw it down tight so the barrel will be held securely on the wheel. An oversized head may be used if the feeder is out of doors where it needs protection from the rain. The feeder may be placed on a plank or concrete platform or on the bare hard ground if where it is protected from the weather. It can be easily moved from place to place and is very durable.—VANCE W. McCray.



S. R. MORRISON, superintendent of S. Brookvale Farm, Windsor, Mass., writes that we were in error in the statement made under the picture of the Hereford steer, published in the FARM MECHANICS Pictorial Section of the June issue. The photograph, Mr. Morrison says, is of "Brookvale Pride 2nd," which will be with the Brookvale Farm 1922 show herd as a senior yearling. The animal was exhibited in Boston as a part of the Massachusetts Agricultural Department Exhibit, having been loaned for that purpose by Brookvale Farm. and it was there that the picture was taken.



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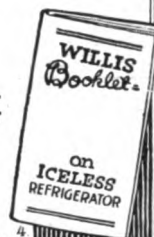
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Choice of Curtains Makes or Mars Room

THAT curtains may make or mar the living room is the opinion of Miss Ellen Hillstrom of the University of Wisconsin, home economics department. She offers these suggestions for choosing living room curtains.

A living room on the sunny side of the house may have dark curtains and still be bright and cheerful, but light curtains are always necessary in a dark living room.

Great care should be taken to select curtains that harmonize with the furniture and wall decorations. If the walls have a great deal of color soft, plain colored curtains are very suitable. They soften the effect of a great variety of color and tone the room down so that it is restful to the eyes.

Plain curtains harmonize with plain walls. In the dark living room with dark walls, bright curtains that harmonize give life to the entire room and add to its beauty.

SOMETHING THE BOYS CAN MAKE

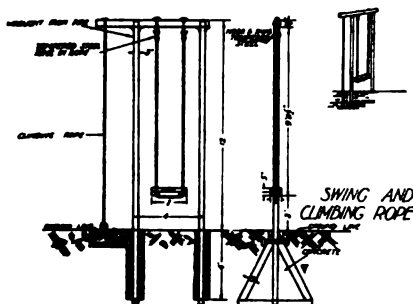
Swings for the Swingless

BEGIN by digging two holes 4 feet deep and 4 feet apart from center. Next, you take two pieces of wrought iron pipe, 16 feet long and 3 inches in diameter, and set them upright in the holes, with care to leave a space of 4 feet—no more, no less—between them. Then you fasten a cross-bar of wrought iron pipe to the upright—to be specific, a cross-bar 6 feet long and 3 inches in diameter, which you make secure to the uprights with pipe-fittings or with a special tee and elbow fitted with set screws. And now, measuring accurately, you fasten to the cross-bar a pair of strong, tempered steel hooks, 30 inches apart and equidistant from the uprights. These are to hold the swing.



At this point you mix a shovelful of cement with two shovelfuls of sand and four shovelfuls of gravel, and enough water to make a thin mixture. Into the holes

it goes, to solidify completely in 48 hours, at the end of which time you attach the rope and seat. To make the seat, you take a board 2 feet long, 8 inches wide, and 1½ inches thick, and on its under side you nail at each end (by way of guarding against cracking or warping) a piece of wood 8 inches long, 5 inches wide, and 1 inch thick. At each end of the seat you bore a hole thru the two thicknesses of wood, and thru the holes you slip a rope an inch in diameter, and at the ends of the rope you splice tempered steel rings, which you fasten to the cross-bar by the iron hooks. If you have provided the right length of rope—about 21 feet, after splicing—all is now complete.



Details of Construction of Swing and Climbing Rope.

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NOTICE TO ADVERTISERS

Forms for the August number of Farm Mechanics will close promptly on July 15. New copy, changes and orders for omissions of advertisements must reach our business office, 1827 Prairie Ave., Chicago, not later than the above date. If new copy is not received by the 15th of the month preceding date of publication the publishers reserve the right to repeat last advertisement on all unexpired contracts

FARM MECHANICS.

But suppose you think the concrete bed too much of a bother, and would prefer the underground braces shown in the diagram printed herewith. In that case, you need six pieces of wood, three for each brace, each piece of wood measuring 4½ feet long by 5 inches wide and 5 inches thick. With these pieces of wood you make a pair of triangles, and up the middle of each triangle thru its apex goes the pipe. A carriage bolt 5 inches long and ½ inch thru will hold the pipe firm at the top. Also, you make it firm at the bottom. And, naturally, you pack down the earth around the pipes and braces.

And suppose you would like to add a climbing rope. Nothing simpler! Bore

a hole at the projecting end of the cross-bar and insert an eye-bolt and into the eye-bolt splice a rope 13 feet long and ½ inch thick. It may hang loose, knotted at the bottom, or, if you like, you can fasten it to an iron ring set in concrete.—Community Service.

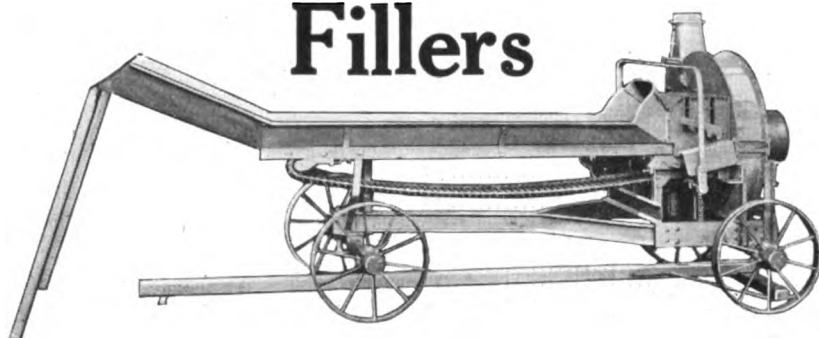


SOMETHING to drink helps Bidly manufacture eggs. A hen will drink 20 times her weight of water in a year if she has it before her.



A SPARAGUS beds fenced off for chickens is another example of co-operation. Hens will eat asparagus beetles but won't harm the plants.

A Sensation in Silo Fillers



Annoying delays with the silo filler are now avoidable. The new Rowell Trojan ensilage cutter is made so strong and designed so well that breakage and choking seldom occur. But, above all this, it is notable for its good work.

The Lightest Running Silo Filler

The steel fly wheel makes the Trojan so light running that it is easily driven by the Fordson and other small tractors or stationary engines. This remarkable one-piece fly wheel causes the machine to operate so smoothly that there is no ruinous vibration to shorten its life.

Equipped With Roller and Ball Bearings

Neither is there a chance of the silage being torn or cut uneven lengths. This is avoided by a special end thrust ball bearing adjustment. Fully equipped with roller bearings. The knives are adjusted by an unusually simple device. All gears and working parts are completely enclosed.

Automatic Clutch Pulley Eliminates Danger

Danger to man and machine is eliminated. The reverse lever is within easy reach of the operator from either side of the machine. Damage to the machine is avoided by a special automatic release on the pulley which disconnects the power just like a friction clutch pulley.

New Introductory Price

A Trojan should be on every farm where there is a silo to be filled. The remarkably low price and its long life are features which you cannot afford to overlook. Write immediately for big illustrated circular and *new* introductory price.

The I. B. ROWELL CO.
WAUKESHA, WISCONSIN



Danger!

He—"I had a good joke to tell you this evening, but I see you are not in a condition to receive it."

She—"Why?"

He—"Because if your face lights up, the powder will go off."—Goblin.



Quite Another Matter

Irate Papa—"No sir. My daughter can never be yours."

Bright Suitor—"Quite right, sir. She cannot possibly be my daughter. I only wanted her to be my wife."—Colorado Dodo.



A Point in Doubt

"Leonidas," said Mrs. Meekton, "I must give you credit for one thing. In all our married life you have never spoken an unkind word to me."

"No, Henrietta."

"And what I'm wondering is whether to give you credit for a lovely disposition or mere lack of courage."—Washington Star.



Two Dollars Saved

A man rushed up to the home of a doctor in the village late one night and asked him to come at once to a distant farm house.

The doctor hitched up his horse and drove furiously to the farmer's home.

Upon their arrival the farmer asked, "How much is your fee, doctor?"

"Three dollars," said the physician in surprise.

"Here you are," handing over the money: "the blamed liveryman wanted \$5 to drive me home."



Not So Romantic

When mother entered the nursery she found Muriel in tears, and in response to her inquiry the child explained:

"We were playing at weddings, and Paul threw rice all over me."

"You shouldn't cry for a small thing like that. It's to bring luck to the bride."

"But," protested Muriel, still sniffing, "what he used was in the pudding."



A Sure Remedy

When a young man's eyesight becomes so poor that he thinks a certain young lady has pearly white wings, he doesn't need to see an optician, but a parson.

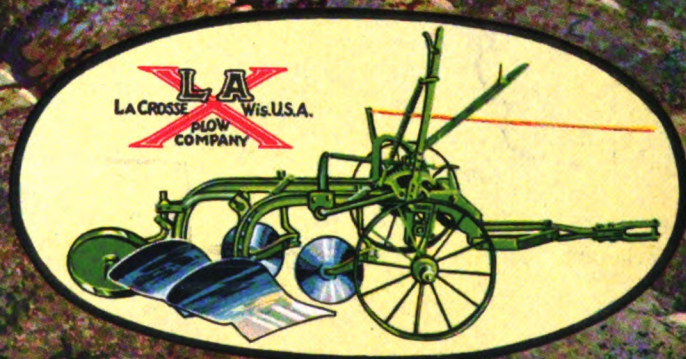
AUGUST
1922

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20 CENTS
PER COPY

FARM MECHANICS

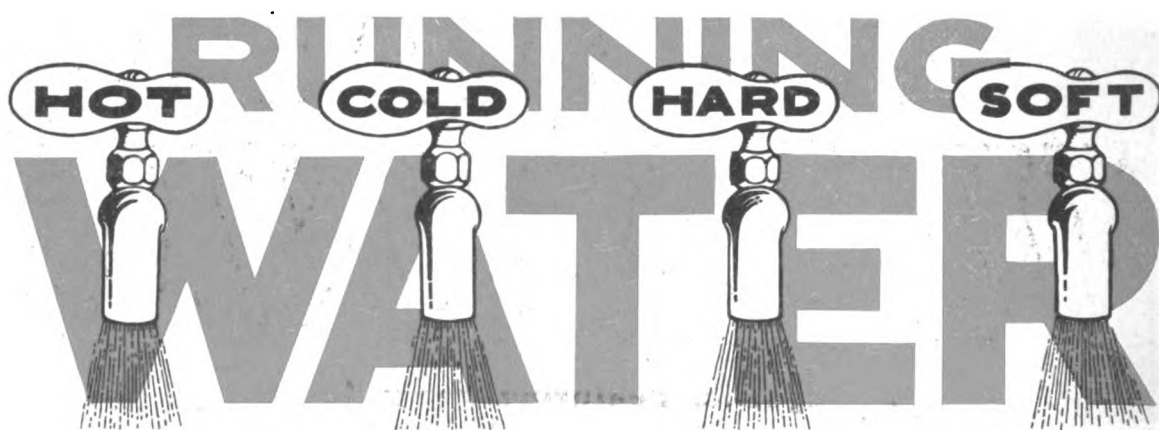
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A Monthly Magazine Featuring Farm Improvements
Machinery, Equipment, Farm Buildings

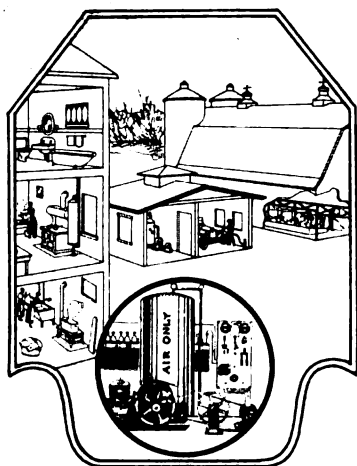


LA CROSSE
TRACTOR IMPLEMENTS
Plows—Harrows—Drills
"For a Perfect Seed Bed"

LA CROSSE PLOW CO.
LA CROSSE WIS. U.S.A.



All with this one simple, economical practical system



Easy and Cheap to Operate

The Milwaukee System is the most economical to install and the cheapest to operate of any high class water system. It is made in many different sizes for different farms. And best of all—you can pay for it in from three to twelve months as suits your convenience.

Milwaukee Air Power Systems have been chosen above other water systems and installed in every state in the Union by farmers and owners of country estates for the following principal practical reasons:

1. All water is delivered "direct from the well," spring or cistern—no water storage tank—always pure, fresh, cool.
2. The system is simple, easily installed, easily operated.
3. It is economical—to install and to operate.

4. The same power unit—very simple and compact—also furnishes light, if desired—or lighting can be added at any time.

Another important factor is the *Water and Light Expert*—we train one in every territory in which we sell. Our expert near you can help you figure out a *practical*, economical system for *your* place—and we will gladly send you his address on request.

Enjoy life—have a Milwaukee Water System—write for catalog today!

Milwaukee Air Power Pump Co.

886 B. Third Street

Milwaukee, Wis.



Simple, Reliable, Efficient

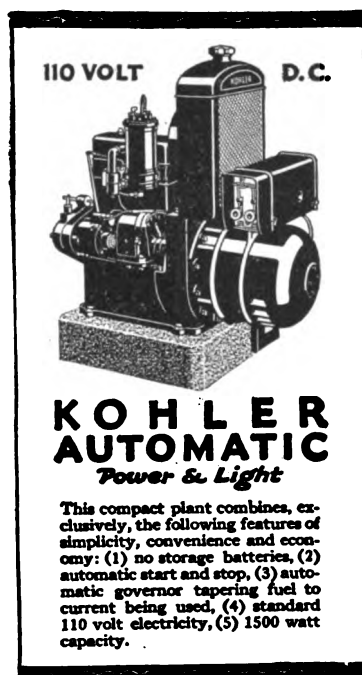
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POWER
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Washing



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for
Ironing



LIGHT
for
Barn Yards

" Electricity has played no small part in bringing simplified, modern methods to farm work and farm living during the past few years. Shorter hours—less manual labor—a brighter, more contented, more efficient household . . . More time for everyone—more pleasure in living."

* * *

ONE of the things that users like best about the Kohler Automatic Power and Light Plant is its simplicity.

It has but three major parts.

These are the engine, the generator, the automatic device.

The engine is of the four-cylinder, valve-in-head type—compact, quiet, steady and economical.

The generator is sturdy and reliable—keyed to the engine's crankshaft, it runs silently and true.

The automatic device is simple and sure, and Kohler patented. It starts the engine and the generation of electricity whenever you turn on any light or appliance.

All the electrical current generated by the Kohler Automatic is delivered directly to the point of use, *without storage battery losses.*

It gets to its work as illumination or power in its original intensity and vigor.

The current is standard, reliable 110 volt electricity, 1500 watt (two electrical horsepower) capacity, which means that it will carry farther and do more work than current from ordinary electric plants.

If you are thinking of installing a power and light plant, as so many progressive farmers now are, be sure you see the Kohler Automatic.

It gives you electrical service in its most useful, most dependable form.

Its price is no more than you are asked for ordinary plants which lack the Kohler's exclusive features. Plant includes 55-gallon gasoline storage tank. The Kohler Automatic has been approved by the Fire Underwriters' Laboratories. Convenient time payments can be arranged.

Send for interesting, illustrated booklet and name of nearest Kohler dealer. Dealers, write or wire today

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Kohler Co., Founded 1873, Kohler, Wis.

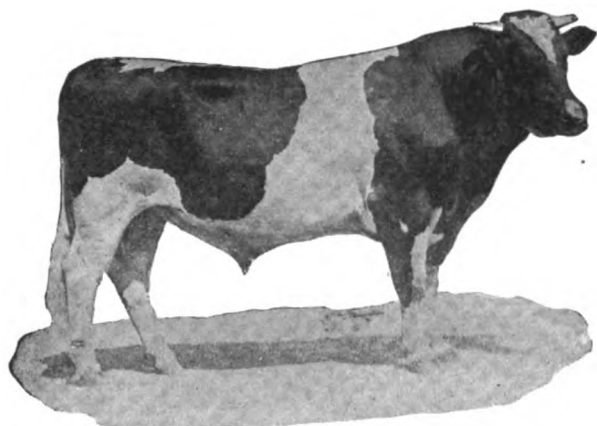
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CREATOR

4½ Years Old

Has 5 daughters fresh, all of which made over 20 lbs. butter in 7 days from over 425 lbs. milk as follows:

1. Pabst Vernon Queen 2d

2 yrs., 5 mos., 6 days { 466.9 lbs. milk
24.01 lbs. butter

2. Pabst Creator Acanthus

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22.9 lbs. butter

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1 yr., 11 mos., 18 days { 455.5 lbs. milk
21.45 lbs. butter

4. Pabst Marigold 3d

2 yrs., 1 mo., 1 day { 469.1 lbs. milk
20.35 lbs. butter

5. Pabst Virginia Johanna 2d

2 yrs., 4 mos., 23 days { 427.1 lbs. milk
20.30 lbs. butter

Head your herd with a brother to these great heifers that are going strong on year test.

PABST STOCK FARM

OCONOMOWOC

WISCONSIN

UNDER FEDERAL SUPERVISION

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FARM MECHANICS

MONTHLY FARM MAGAZINE ON TRACTORS
FARM MACHINERY, BUILDING IMPROVEMENTS AND
MODERN AGRICULTURE

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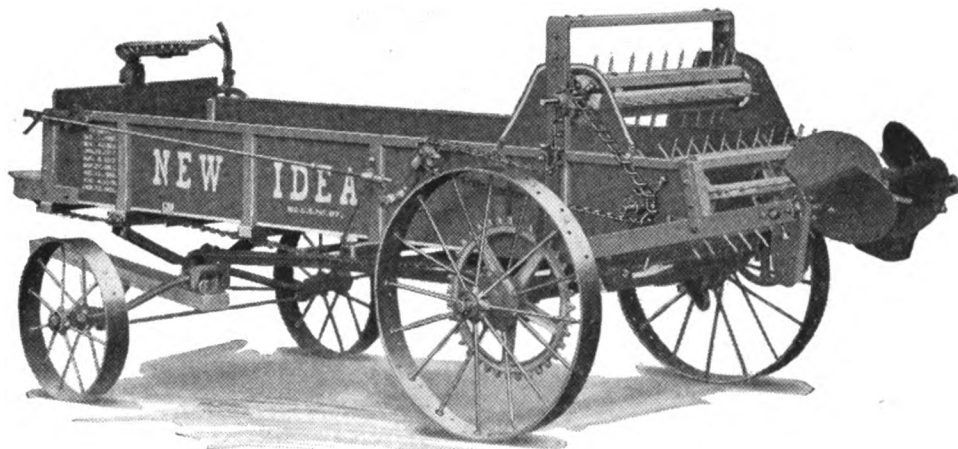
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This Latest Model NEW IDEA at a Bedrock Price!

HERE it is—the B-3 Nisco or New Idea Spreader, the latest addition to the Nisco line. It is a standard Nisco outfit, built in a *most popular size*. Light draft, easy to load, extremely sturdy and rigid; and best of all—it sells at a *new, unheard-of price that will astonish you!*

You know that Nisco policies have always been conservative. And it is in this same fair minded, conservative spirit that we pass out this word of advice: *Place your order now for this B-3 Model Nisco, even though you will not need the machine till fall or winter.*

We say this because we are already swamped with orders and every indication points to an acute shortage of this size. We are handicapped already by inability to get sufficient materials.

Remember our Gold Seal Guarantee, protecting you against any breakage for a year. If no distributor is near, write direct to us. Fill in and mail the coupon today!

THE NEW IDEA SPREADER COMPANY
"Spreader Specialists" **COLDWATER, OHIO**

NISCO

Original Wide Spreading Spreader

New Idea and Nisco are one and the same machines

Known as New Idea in the East and Nisco in the West

NEW IDEA

Original Wide Spreading Spreader

The New Idea Spreader Co.
Coldwater, Ohio

Gentlemen: Please send me complete information on the new B-3 Nisco Spreader.

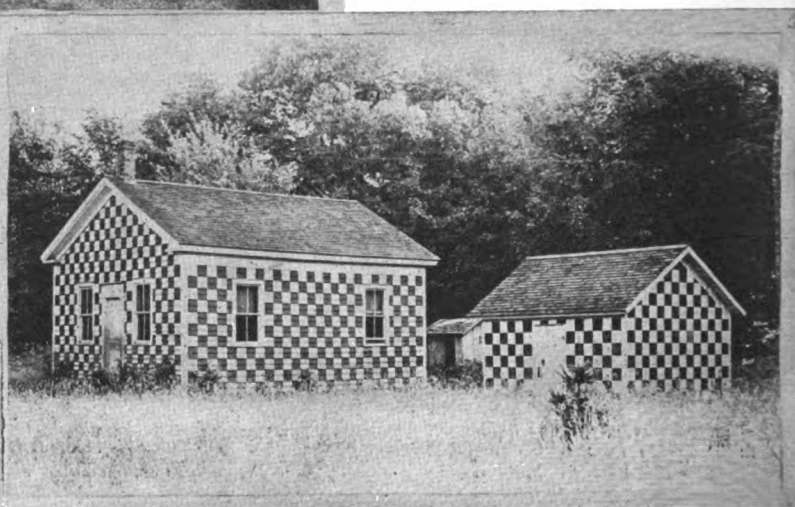
Name

Address



Members of a Rural School District Near Ashville, N. Y., Couldn't Agree on a Color Scheme for the School Buildings, so They Compromised with the Effect Shown in the Picture Below. Rather startling!

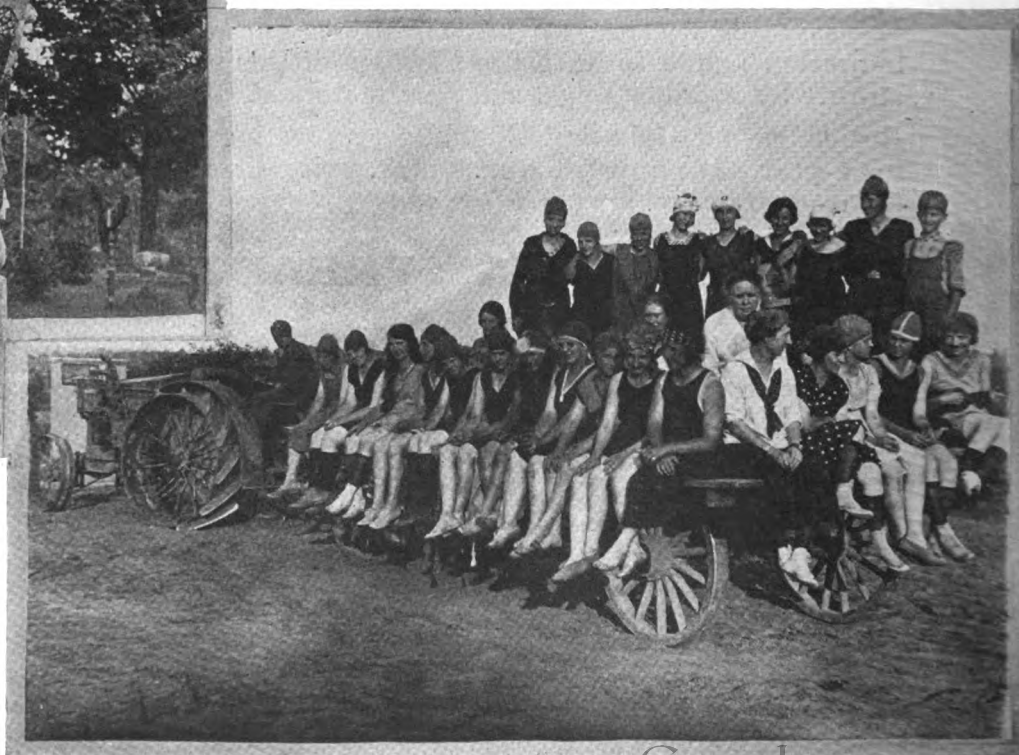
Pacific Coast States Make Much Ado About the Size and Ages of the Trees in the Redwood Forests. Every now and then there are on eastern farms trees that rival the western forest giants. Here is a black walnut at Setauket, L. I., that has attained enormous size, as can be realized by the fact that it is as wide as the six girls standing side by side in front of it.



In the Lake Regions During the Cherry Season Girls from Nearby Towns Join the Pickers and Have Great Sport as Well as a Profitable Few Weeks. Orchard owners make the stay of the girls as pleasant as possible. One of them, near Sodus Bay, on Lake Ontario, N. Y., uses his tractor to convey the pickers for their evening swim.



George Carr, Union Springs, N. Y., Spent Many Days and Weeks and Months Carving This Dead Tree Into a "Totum Pole." His work is artistic and the result draws many visitors.





TRESCO RADIO

For the Past Seven Years Tresco Receiving Sets Have Been Successfully Used in All Parts of the World

Today they come to you as a tried and tested set whose reliability is assured by their past performance. On the farm the news of crops and weather reports is becoming more and more essential—fruit growers can save thousands of dollars through using this information. Agricultural colleges are Broadcasting programs of vital interest to those engaged in farming; to all of this is added the enjoyment of a concert in the home after the chores are done which would be otherwise unobtainable.

*Ask your dealer for Tresco Receiving Set, if he cannot supply, write us.
Illustrated folder on request.*

W. B. SALES COMPANY
Room 605 59 E. Van Buren St., Chicago

MILLER Tractred

Gives the Fordson the Advantages of Both the Round Wheel and Tracklayer Types of Tractor with none of the Limitations of Either

Round-wheel Tractors are best for normal working conditions because they are simple, light, speedy, easy to turn. But there are conditions of road or soil where they cannot operate.

Tracklaying or "crawling" Tractors are "life-savers" in soft soil, on steep grades and wherever extraordinary tractive power is necessary. But they are as much out of place in ordinary field work as snowshoes in summer.



The MILLER TRACTRED puts "Snowshoes" on the Fordson when extra traction is needed; and leaves you the original FORDSON all the rest of the time.

You put the TRACTRED on the Fordson wheels in 5 minutes, and take it off in 1 minute. Thus you get all the advantages of both types when you need them, and the disadvantages of neither.

The cost is surprisingly low. Send for circulars.

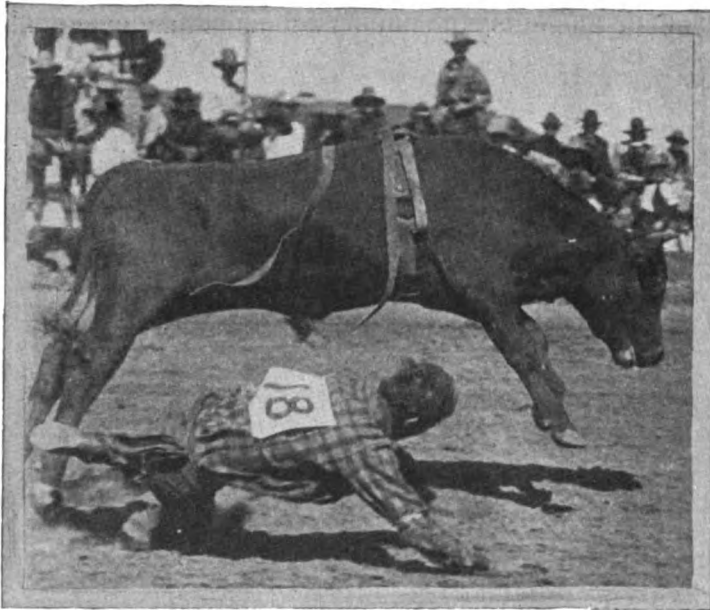
Miller Tractred opened up the Snoqualmie Pass, traveling 9 miles up a steep mountain range in Washington, in snow 2 to 12 ft. deep.

MITCHELL BLAIR COMPANY

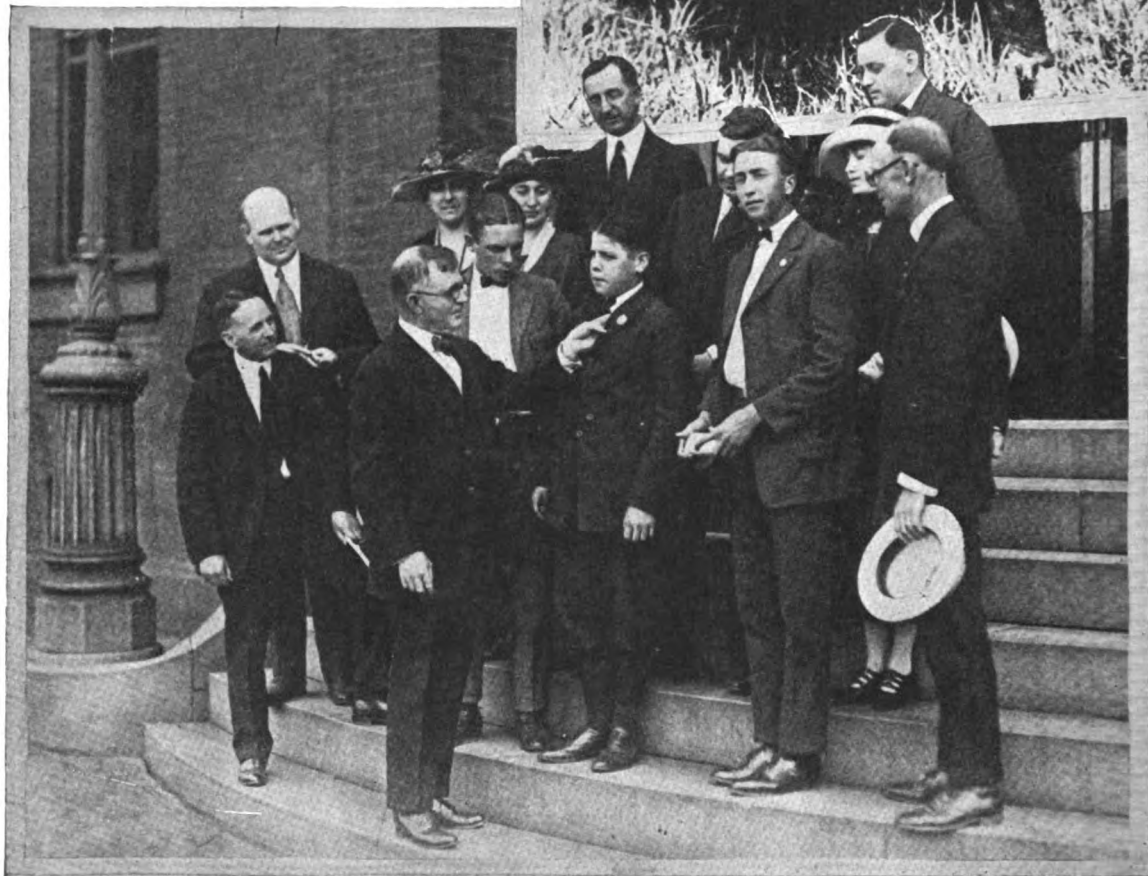
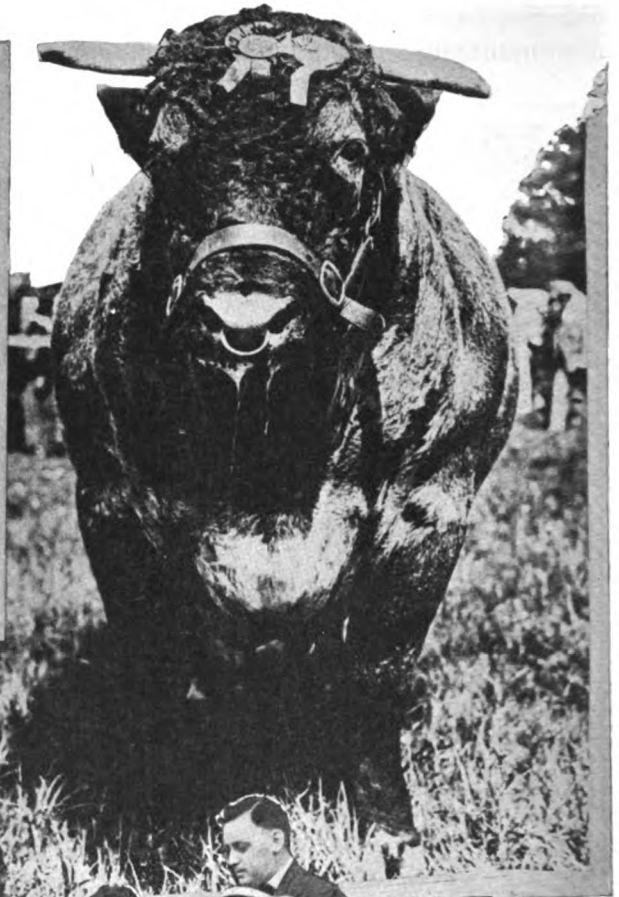
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1011 Hearst Building

CHICAGO

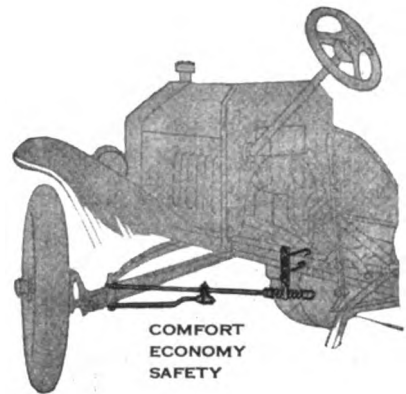


"Bulldogging," or "Throwing the Bull," is a Sport That Gives the Spectators at the Round-up Exhibitions a Thrill. Sometimes, however, the thrower gets thrown, with disastrous results.



OUR FARM KIDS TOOK "COALS TO NEWCASTLE" the Other Day, and in the Presence of Royalty at the Most Famous Livestock Show of the Old World, They Won Another International Cup for Uncle Sam. It was for livestock judging, and they won it right at the cradle of most of the modern breeds of livestock that furnish the beef, mutton, pork, milk and wool for the world. These three boys from Maryland beat by over 200 points two boys and a girl selected to represent England against the United States. These boys are: Werron Rice, George Warlow and Joseph Glacken of Cecil County, Maryland, Boys' Agricultural Club members who won the trip to the Royal Livestock Show, England, in the Boys' Livestock Judging Contest held at the Southeastern Fair, Atlanta, Ga., in 1921. These boys defeated 13 other State teams in the contest, picked as a result of State, county and community contests held under the auspices of the United States Department of Agriculture and the State agricultural college, in which 15,000 boys and girls participated. Making the trip to England with the Maryland team are E. G. Jenkins, State boys' club agent, University of Maryland; W. C. Snarr, Montgomery County, Md., the county agent who coached the successful team, and C. L. Chambers, Office of Extension Work, States Relations Service, representing the United States Department of Agriculture. The picture shows the boys receiving the congratulations of Secretary Wallace of the Department of Agriculture at Washington. Above at the right is the type of animals that the Maryland boys had a chance to judge. He is "Pierrepont Golden Prince," grand champion Shorthorn at the Royal Agricultural Society Cattle Show.

Your Ford will
keep the road
if it has



"COMMON SENSE" RADIUS RODS

For All Ford Vehicles

*You pay for a set every year—why
not enjoy the benefits?*

*Sold under an absolute
guarantee of satisfaction
or your money refunded.
We back that guarantee
with ample financial re-
sponsibility and 68 years
of manufacturing experi-
ence. You take no chance
in giving these rods a
trial. Send for a set at
once—and prove their
merits for yourself.*

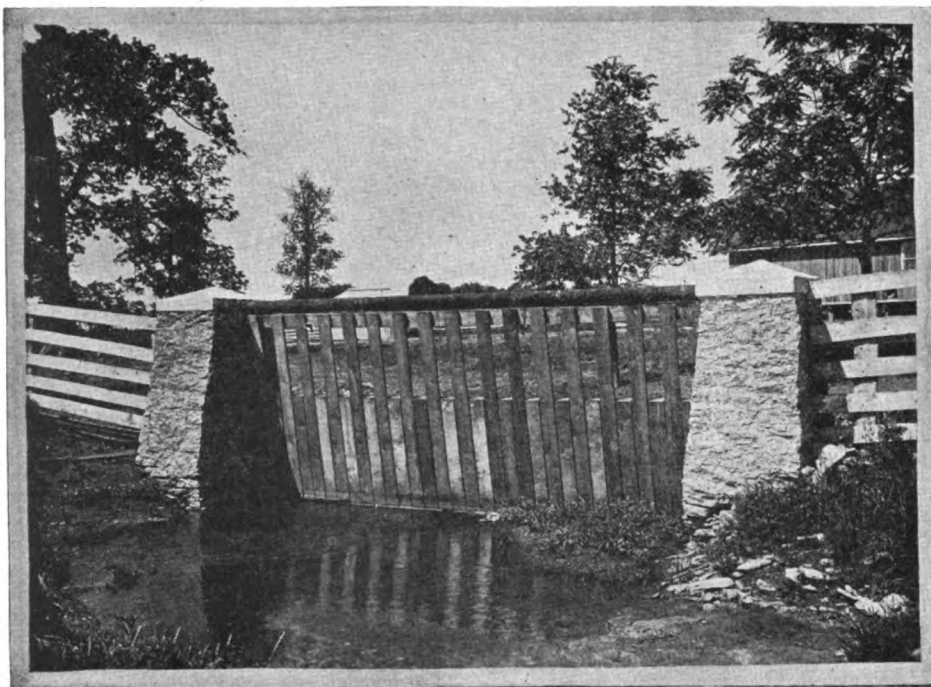
NO rods have ever been conceived that offer the combination of good features embodied in these patented rods. They have durability, adjustability and flexibility. It is worth their price to get the strain off the crank case and engine and insure safety. It is worth their price to get the economy effected. It is worth their price for the steering comfort they give. You take no chances in installing a set.

Distributors Wanted Everywhere

**Thousands of "Common Sense" Rods already in
use. A quick seller. Don't miss our proposition.**

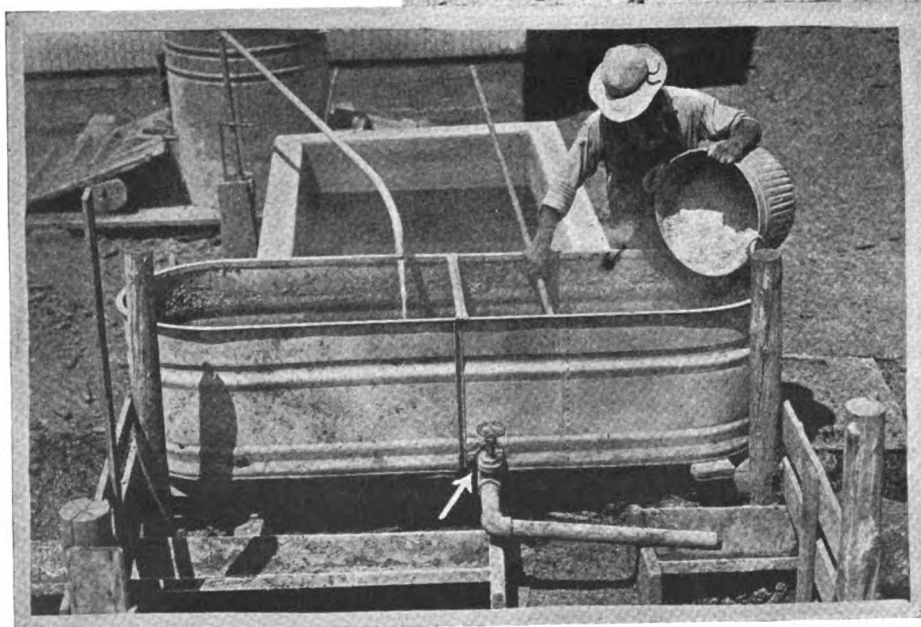
Manufactured by THE SILVER MFG. CO. (Established 1854)

Box 201 SALEM, OHIO



Fencing a stream to prevent stock from getting from one field into another has been solved on the Coldstream Farms, Lexington, Ky., by the swinging gate shown in the picture at the left. The fence swings with the water as it rises and falls and permits floating debris to pass. At the same time it provides an effective barrier to the stock.

E. B. Carter, Sargent's Bluff, Ia., Has Rigged Up a Rather Elaborate but Time-Saving Method of Slop-
ping His Hogs. Shown in the picture at the right is a hog lot with the slopping equipment which consists of a tank with water connections and outflow pipe, which may be turned to direct the feed to different troughs.



To the Left Is a Close-up View of Mr. Carter's Tank and of the Outlet Pipe and Double Troughs, Each Leading to a Different Pen. This method permits the feeding of the hogs without carrying or wheeling the wet feed.

Full Service

from your

Car, Truck or Tractor



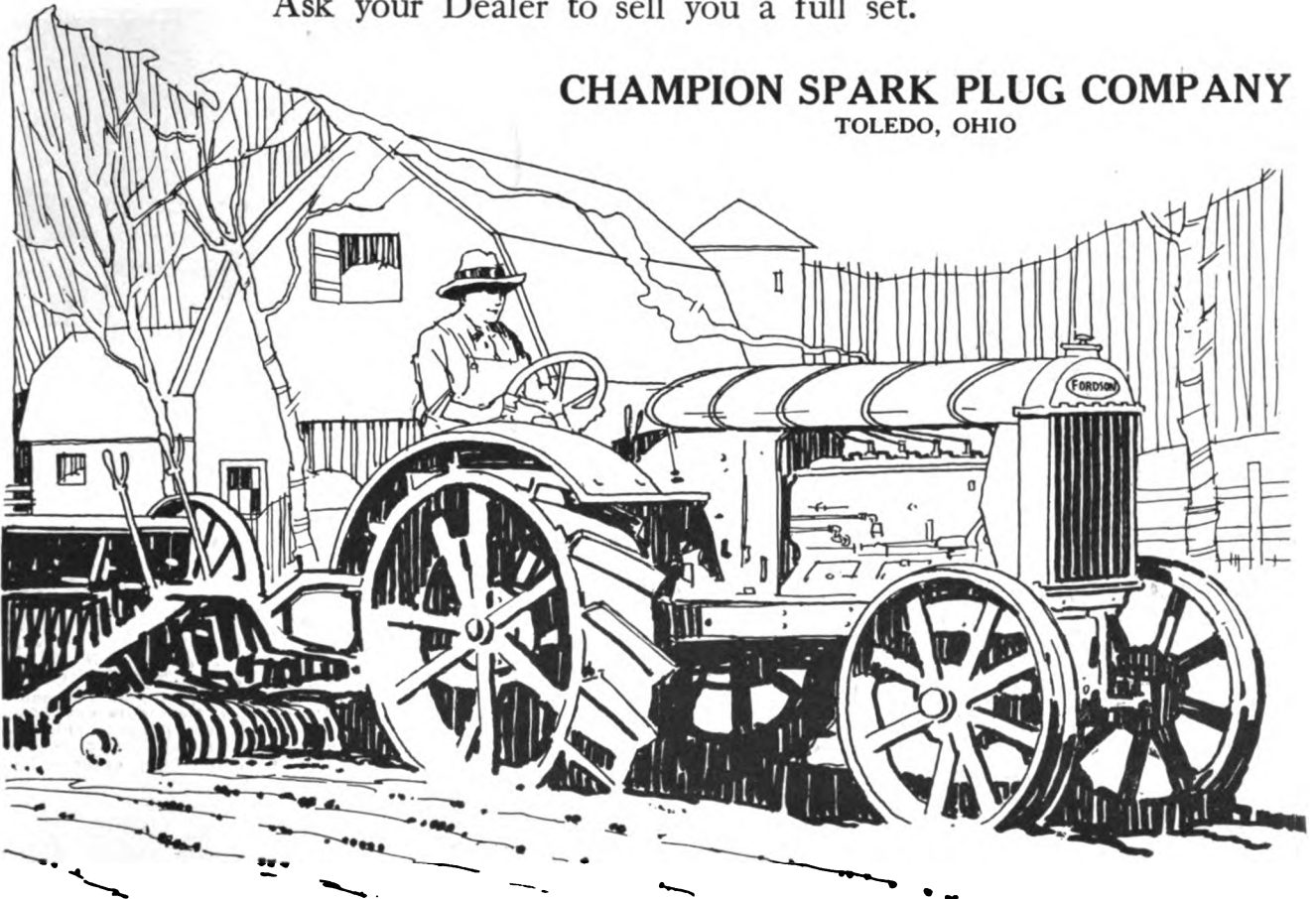
Champion
For
Every
Engine
Everywhere

You want "full service from your engine", and a full set of CHAMPIONS will not cost you one cent, but will pay for themselves in no time, for they will burn more evenly the gas in each cylinder.

CHAMPIONS give more perfect ignition, resulting in a smoother-running engine with more power and increased mileage for each gallon of gas used. It is real economy to buy a full set of dependable CHAMPION Spark Plugs. They cost you less, last you longer, save you money, insure your engine, aid quick-starting, give more power, and are a wonderful value.

Ask your Dealer to sell you a full set.

CHAMPION SPARK PLUG COMPANY
TOLEDO, OHIO





The Song About the "Old Hen That Had a Wooden Leg" Applies to This Biddy, Who Lost a Leg Under an Automobile. Its owner amputated the lower part and substituted the peg-leg shown, which enables the hen to chase bugs as readily as her more fortunate mates.

Below Is One of Those Oddities That Nature Brings About Now and Then. The calf was born with double rear feet and is healthy as can be.



Out in California They Vaccinate Chickens Against Chicken Pox. This picture shows a poultryman at Petaluma at work inoculating one of his flock.



Hens Mother Ducks and Pheasants and Other Birds, But It Is not Often One Adopts Orphan Pups. This old hen kept this litter about her and mothered them until they outgrew her.

The Work of the Month



AUGUST is the month when we have a chance to relax from the strenuous work of preparing the seed bed, seeding, cultivating and harvesting the small grains, which takes up the time from early spring until nearly thru July. The let-down between the July harvests and time for the gathering of the silage crop and the corn crop, as well as the winter vegetables, brings thoughts of vacation, which may take the form of an auto trip, community picnic, a visit to the local fairs or just a surcease from hard work. Whatever form this may take, a change of scene and a relaxation is good, for, as someone has said, it "changes the mental polarity."

RELEASE from long days in the fields gives opportunity to take stock of the need for improvements about the farm. Paint is a rejuvenator of buildings, and now is the time to apply it. Longer life, a more neat appearing farm and greater satisfaction with the place are the rewards the owner reaps when he takes his paint brush in hand.

IT soon will be silo filling time. The new crop will be better if it is put into a clean silo, which has been open and well aired. If the wood silo is not airtight it may be made so by painting the inside with paraffine. Dissolve four pounds of paraffine in a half gallon of gasoline and put on with a paint brush. The gasoline quickly evaporates leaving the paraffine in the pores of the wood. Or the paraffine may be heated until melted and then brushed on.

SHARP knives in the ensilage cutter save trouble when the machine is put into operation. Dull knives use more power and the machine chokes, stalling the tractor or engine that is driving it. A governor on the tractor engine keeps the ensilage cutter running evenly and takes away the strain on the engine, as the control regulates the power as the load increases or decreases.

A GOOD pasture for breeding ewes is essential, as the ewes should be in good flesh before the

ram is turned in. Two or three weeks of pasture puts the ewes in condition to produce healthy lambs.

LAND that is to be used for winter wheat will be better and produce a larger crop if it is limed in advance of plowing. Early plowing, too, is recommended, as the soil is in better condition if it is turned and allowed to lie fallow for several weeks in advance of seeding.

SURPLUS cockerels of the poultry flock bring greater profit if they are marketed as quickly as they are large enough. Feeding them for the fall market costs more in feed and labor than the difference in returns. The best birds, of course, should be retained for the breeding flock. Hens that are molting should be culled out and marketed, as well as those who have not the physical characteristics of layers.

IF the second crop of sweet clover fills well it is best to keep it for seed. If not it should be cut toward the end of August, and the cover crop put in. This also is the time to harvest sweet clover seed. Alfalfa and grasses should be seeded this month for next season's crop.

IT will not be long before it will be necessary to set up the stoves, if there is no basement heating plant in the house. This is a good time to consider the advantages of a furnace, either of the pipeless or pipe varieties. Installed in the basement or cellar, they give greater satisfaction, as all the muss is confined below stairs and the house will be heated more evenly.



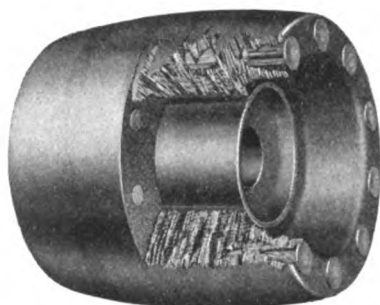
It Soon Will Be Time to Fill the Silo with the Winter's Supply of Feed for the Livestock.

Fordson

for Belt Power

Uses

ROCKWOOD *The* DRIVE PULLEY

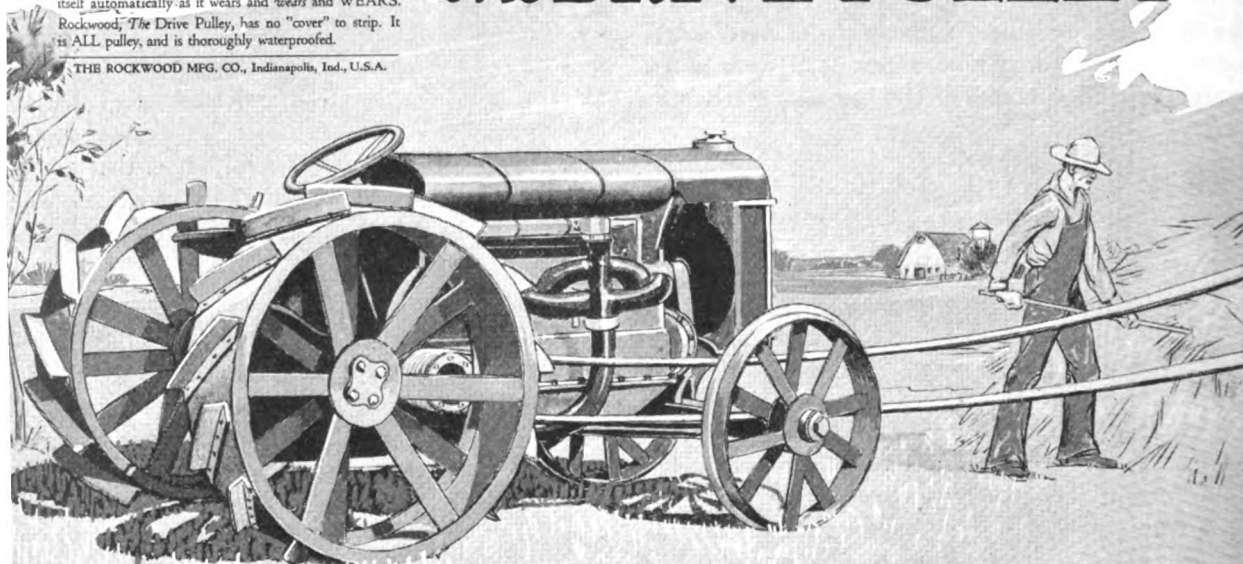


(Section Removed to Show Construction)

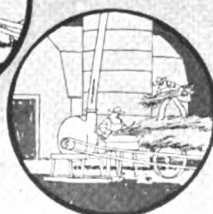
ROCKWOOD, *The Drive Pulley*, consists of a solid block of tough, wear-resisting fiber (seldom less than two inches thick) built around and into a heavy cast iron hub. The end-grain is exposed as a surface to grip the belt surely and firmly—a surface made up of layer upon layer of fiber hydraulically compressed and cemented—a surface that renews itself automatically as it wears and *renews* and WEARS.

Rockwood, *The Drive Pulley*, has no "cover" to strip. It is ALL pulley, and is thoroughly waterproofed.

THE ROCKWOOD MFG. CO., Indianapolis, Ind., U.S.A.



For Best Results Use
ROCKWOOD THE DRIVE PULLEY
on all belt-driven machines



AS IT SEEMS TO US

Let's Go to a Picnic

AUGUST is the month of picnics. Community gatherings are numerous and give every member of the family an enjoyable time. Farm Bureaus hold picnics each year and there is much of value to be derived from them. Neighbors meet neighbors; men

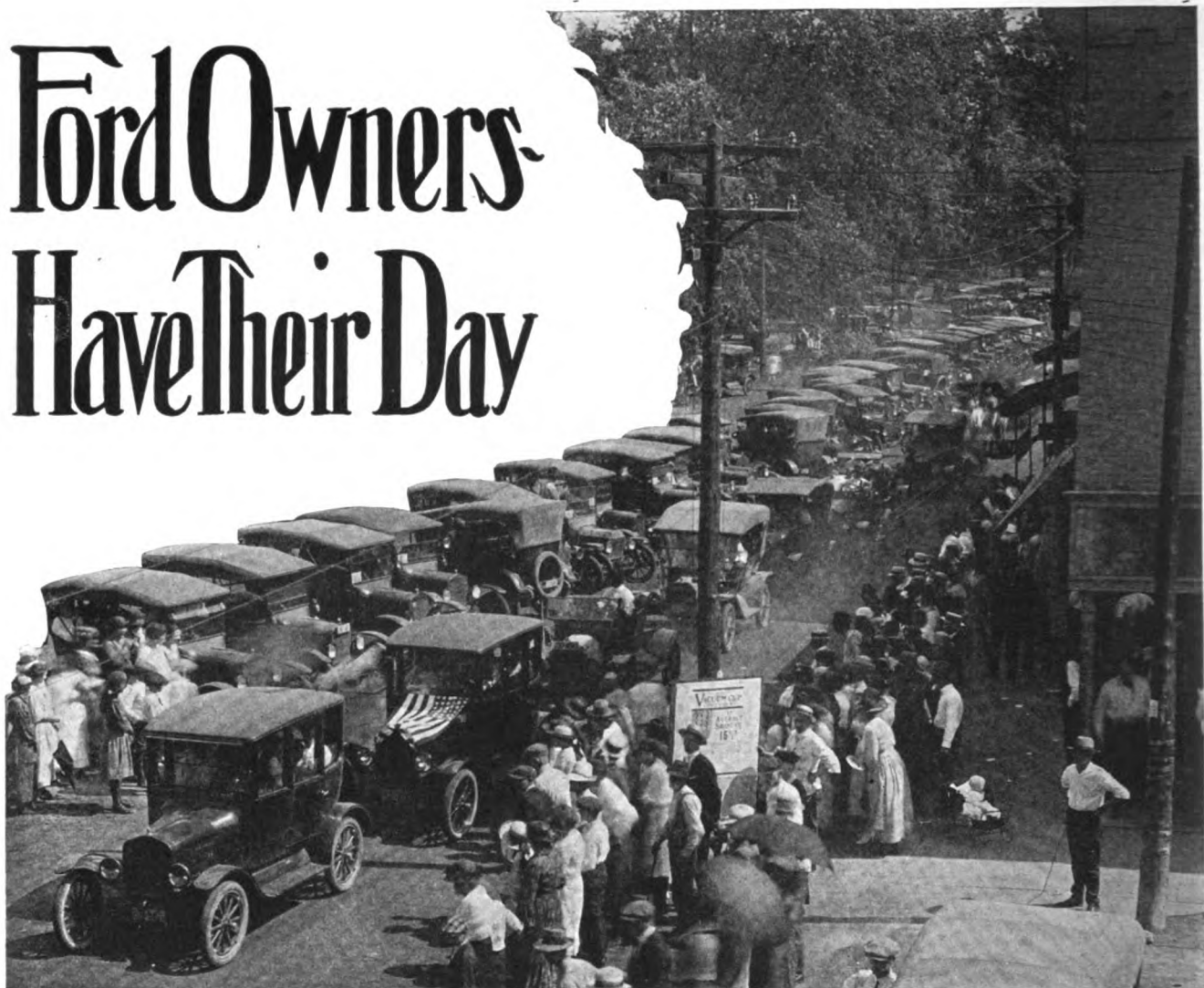
and women swap experiences, while the youngsters have a day in new surroundings, meeting old and making new friends and all feel the better for it. Go to your community picnic. If one is not planned, help promote it. They are worth while.

Fun for farm folks is well deserved.



There's Fun for Father and Mother, Son and Daughter at the Community Picnic.

Ford Owners Have Their Day



"Ford Day" Parade Passing Thru the Main Street at Waverly, Ill.. The celebration attracted hundreds of automobiles from surrounding country and everyone had a pleasant and profitable time.

Ford Dealer and Merchants of Waverly, Ill., join together to Entertain Owners of Ford cars and trucks and Fordson tractors and many hundreds respond.

"Ford Day" popular with owners and businessmen and is to become annual affair in many cities.

By JOSEPH D. EDDY

"FORD DAY" in Waverly Ill., a city of 1,800 inhabitants, was a typical June day. The night before there had been a "baby" cyclone. The wind had broken the limbs off many trees and had uprooted others. The rain, of not long duration, had nicely laid the dust of the dirt roads and had given the crops much needed moisture. Following the storm the sun shone brightly. The temperature was high. It was just the day for the farmers in this rich agricultural section to be in their fields.

Waverly's appearance on this June morning was rather a disap-

Have you had a "Ford Day" in your town? If you have not you have missed a lot of fun

Representatives of FARM MECHANICS who visited Waverly, Ill., for the "Ford Day" celebration, tell in the accompanying article just what a "Ford Day" is and how everyone profits by it.

Farmers and their families have a chance to hold a get-together meeting with their friends and neighbors, and to do their buying; merchants have an opportunity to hold special sales for the benefit of their old and new customers; the Ford Dealer brings together all of the persons who are using Ford cars and trucks and Fordson tractors.

FARM MECHANICS believes that a "Ford Day" promotes the community spirit, and is an enterprise that will be pleasant and profitable.—THE EDITOR.

pointment to visitors. We of FARM MECHANICS had expected to find the streets of the city crowded with people. They were not. They had the appearance of the streets of the average city of its size on a summer day, which is to say they were well nigh deserted.

H. Jay Rodgers, who is the active head of H. J. Rodgers, Ford dealer at Waverly, smiled at the pessimism of the visitors. "Wait until after dinner," he said. We waited.

It was not long after noon when we learned what a "Ford day" really is. Fords began to arrive from all directions. There were new Fords

and old Fords; open cars and closed cars; trucks and tractors, all bearing the Ford or Fordson name. Some of the cars were tastefully and artistically decorated; others were displays of the ingenuity of youth, the boys having gathered about all the discarded implement wheels, lightning rods and other things that do not belong to an automobile to decorate the cars entered in the "most comical turnout" class.

Long before the start of the parade, the opening feature of the "Ford Day" celebration, the streets were crowded. Every available bit of parking space was filled. Fords, side by side, lined the centers of the city's thoroughfares. The stores were filled with people. Ice cream and soda places were doing a rushing business. At the Rodgers Ford salesrooms, owners of Fords and Fordsons were buying parts, supplies and accessories. Business was booming; the people were smiling, and were exhibiting an intense interest in the preliminaries to the afternoon's program.

The parade started with the customary lateness. It was a good parade, made up of Ford cars and trucks, and Fordson tractors. There was the Waverly fire department with its motorized equipment mounted on a Ford truck chassis. Then came the band riding in a gaily decorated Ford truck. Following were Ford cars of all kinds, from the brand new flower decked



H. Jay Rodgers, Ford Dealer at Waverly, Presenting a Drum of Oil to the Winner of the First Prize for the Best Account of What His Fordson Has Done for Him.

Sedan to the open car that has been in constant use thirteen years and has traveled more than 100,000 miles. Bringing up the rear was a string of Fordsons, which seemed to have difficulty in maintaining the slow pace of the preceding passenger cars.

After the parade, the cars entered in the various classes lined up before the judges' stand, and the prize winners were selected. Along toward 5 o'clock, the judging over, there was an obstacle race, Ford drivers maneuvering their cars thru closely set barrels in the streets opposite the park.



Exhibit of Ford Cars and Trucks and Fordson Tractors and the Implements Specially Designed for Use with Fordsons, Staged by H. J. Rodgers, Ford Dealer, in the Public Square at Waverly. This exhibit was comprehensive and gave the visitors a clear idea of how the farm may be Fordsonized.



Waverly Fire Department Apparatus Mounted on a Ford Truck Chassis Was One of the Features of the "Ford Day" Parade.

In the evening the band played in the park. There was a free moving picture show at the theater. The show consisted of eight reels secured from the Ford Educational Library, showing "Where and How Fords Are Built," "The Power Thought Built," "Horseless Farming in the Corn Belt," "The Son of the Soil," and a comedy to "send them away laughing."

Then, too, there was the "Old Fiddlers' Contest," and there would have been a dance, only it was decided the weather was too warm for violent exercise.

Those, briefly described, were the high spots in Waverly's "Ford Day." It was a great day. The city's population for an afternoon and evening had been more than doubled. There were, it was esti-

mated, more than 700 Ford cars from the surrounding country parked in the city's streets. Women and men, girls and boys took advantage of their visit to the city to do their necessary buying, thus combining needful purchasing with pleasure. In fact, it was a profitable day as well as a day of healthy fun and interest.

"Ford Day" in Waverly was the result of co-operation of the business men of that city, the leading spirit of whom is Jay Rodgers. The celebration was carefully planned and widely advertised. There was promised good, whole-



Winners of First Prize in the Class for Ford Cars Bringing the Most Generations. Here Are Great-Grandmother, Grandmother, Mother and Daughter, All of Whom Motored to Waverly for "Ford Day."



The Streets of Waverly Are Kept Well Oiled, This Combination of Sprinkling Tank and Fordson Tractor Performing the Work.

some fun and the promise was fulfilled. Visitors came from as far away as fifty miles, which shows that the interest aroused was widespread.

Thru the efforts of Mr. Rodgers a business men's association was formed in Waverly last winter. All work together instead of separately, as is often the case in a small city. One outgrowth of the association was the formation of a band—and it's a good band, too.

Several weeks before the date set for "Ford Day" the plans were laid. Waverly merchants contributed some article from their stocks of merchandise to be offered as prizes. Automobile supply and accessory

manufacturers made contributions. Together, the prizes would cost around \$700 or \$800. All were given to the winners in the different classes.

Every automobile that came to Waverly was supplied with a sticker for its windshield, it mattered not whether it was a Ford or any one of the other makes of cars. This sticker invited everyone to "Come to Waverly on Ford Day."

Rodgers' Shop Talk is the name of the small newspaper or house organ the H. J. Rogers Garage publishes every once in a while. A special edition of this publication, printed on pink paper, was issued.



Thirteen Years of Constant Use and More Than 100,000 Miles Is the Record of This 1910 Ford Car, That Was the Prize Winner in Its Class at the Waverly "Ford Day" Celebration.

The program was extensive, as is shown by the following, which is a reproduction of it in full:

Best Decorated Open Car, Driven in Parade.

Best Decorated Ford Closed Car, Driven in Parade.

Ford Car Coming Longest Distance, Driven in Parade.

Ford Car Bearing Oldest Engine Number, Driven in Parade.

Ford Car Bringing Most Generations, Driven in Parade.

Ford Car Bringing Most People in One Load, Driven in Parade.

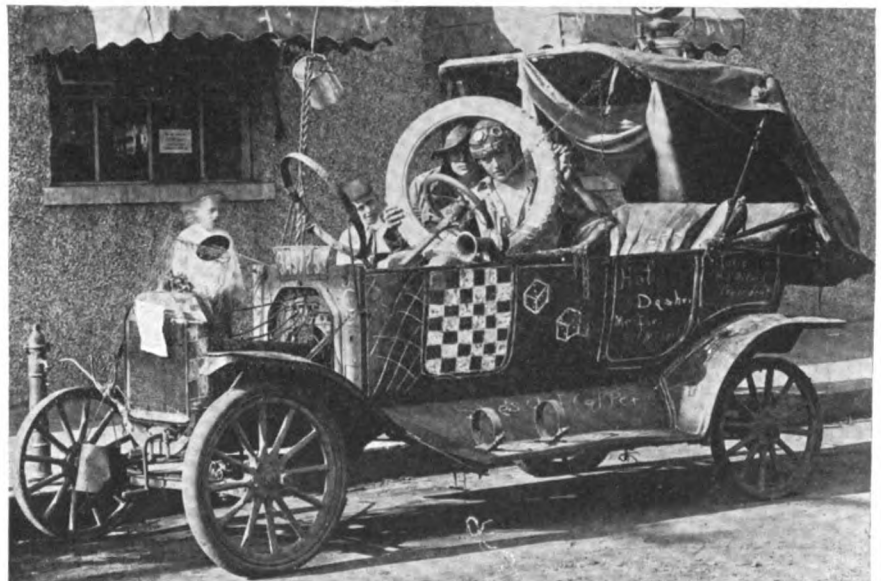
Ford Car Bringing Largest Family, Driven in Parade.



This Picture Shows Numerous Prize Winners, the Driver Having Been Awarded First for the Best Decorated Ford Car in the Waverly, While the Little Girl in the Center Wrote What the Judges Decided Was the Best Essay on Ford Cars.

It contained a complete program of the day, the various classes in the parade for which prizes were offered, and the prizes were named—auto tires, cans of lubricating oils, shock absorbers, supplies and accessories of all kinds; also merchandise, such as shoes and flour and candy and theater tickets.

Seven thousand of this edition of *Rodgers' Shop Talk* were mailed or given out. The local newspaper, *The Waverly Journal*, did its full share in advertising the day, as did all the merchants, many of whom took occasion to hold special sales for the benefit of the visitors.



All Fixed Up for the "Ford Day" Parade. These two young men showed great ingenuity in replacing the regular Ford equipment and adding to it and were awarded first prize for the "Most comical turnout."



The One Good Tire on This Ford Car Had Traveled 16,750 Miles, so the Driver Was Awarded First Prize in the Longest Tire Mileage Class, as Well as Second Prize for the "Most Comical Turnout."

Ford Car Bringing Five Heaviest Men, Driven in Parade.

Ford Car Bringing Five Heaviest Women, Driven in Parade.

Ford Car Bringing Five Oldest Persons, Driven in Parade.

Ford Car Driven by Oldest Person, Driven in Parade.

Oldest Ford (Worm Drive) Ton Truck, Driven in Parade.

Ford Car, Truck or Tractor, Driven in Parade by Homeliest Man.

Any Ford Owner Reporting Longest Tire Mileage.

Best Decorated Fordson, Driven in Parade.

Any Fordson Owner from Anywhere

in the United States Writing Best Account of What Fordson Has Done for Him.

Any Child, 16 Years Old or Under, Writing Best Ford Story.

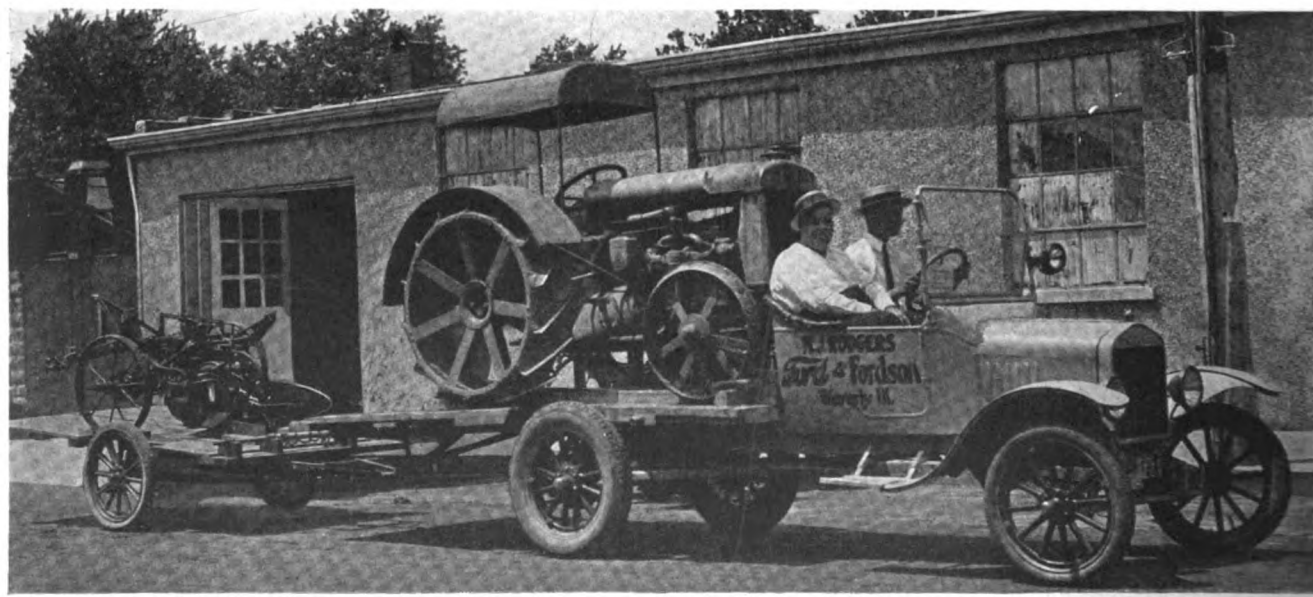
Obstacle Race.

Every one of these classes had entrants, which made a pretty comprehensive parade and one which held the attention of the spectators. And at the conclusion of the parade it was an interested crowd that watched the judges make their selections—a crowd that was not adverse to making suggestions and that was not slow in exhibiting its approval as the winners were named.

In the evening more than 1,500 people watched the unreeling of the



This Whole Family Attended the "Ford Day" Celebration at Waverly, and Carried Off Several Prizes. Here are shown great-grandmother, grandmother, mother and daughter, and great-great aunt and great aunt.



One of the Features of the Waverly "Ford Day" Parade Was the Ford Truck of H. J. Rodgers, with a Fordson Tractor, and the Two-Wheel Trailer Carrying a Two-Bottom Plow. Incidentally, this combination is well known in the vicinity of Waverly, as this is how Mr. Rodgers carries his stock directly to the farms of prospective buyers and shows them how the Fordson and implements will work in the field.

Ford Educational Library Films, and helped select the winners in the Old Fiddlers' Contest, for which Mr. Rodgers offered cash prizes. While waiting their turn to get into the theater—it holds only 500 persons—the visitors were entertained by the band.

Thruout the day, a Pathe moving picture operator filmed the crowds and the parade, both as a whole and individually. A week later these films were shown by Mr. Rodgers at the Waverly theater, so that Waverly's "Ford Day" had its epilogue.

Does a "Ford Day" pay? Being observers at Waverly, we, of FARM MECHANICS, would say that it does. This judgment is based on the very evident good time the crowds had; on the pleasure shown by the prize winners when they returned to the Rodgers Garage and received their prizes; on the crowds that filled the Waverly stores, and on this brief



The Tractors in the "Ford Day" Parade Went Too Fast for the Photographer, Result Bearing a Resemblance to an Automobile Race.

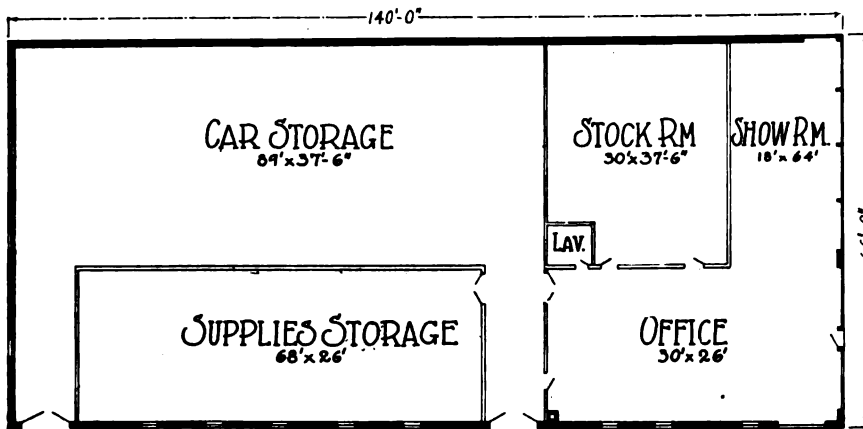


Diagram Showing the Layout of the Ford Salesroom and Garage of H. J. Rodgers at Waverly, Ill.

note that was received from Jay Rodgers as this is written:

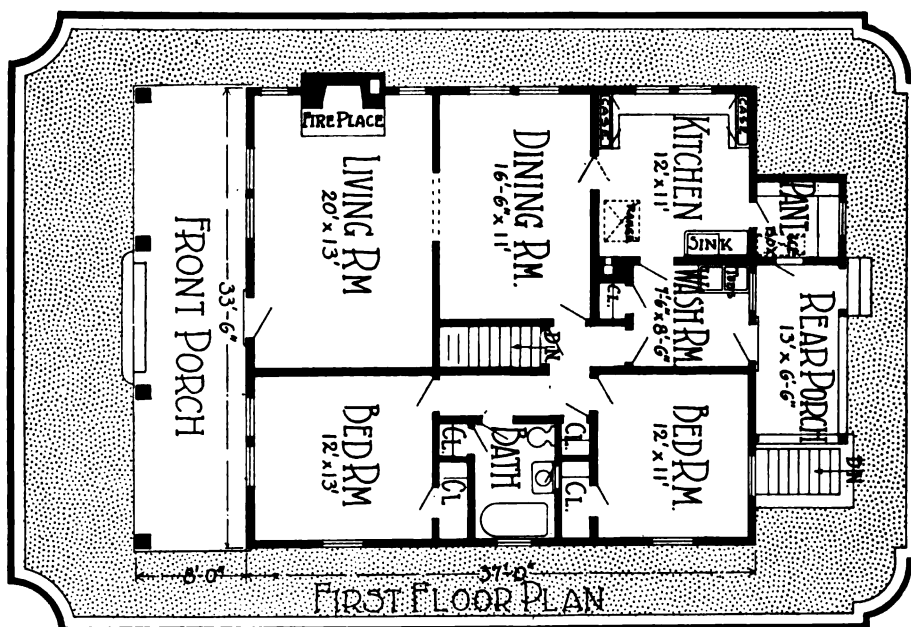
"In summing up 'Ford Day' we might say the battle is over and we all had a good time. (Sold two cars after supper)."

C. P. Williams, Ford Company branch manager at St. Louis, also was a visitor at Waverly and watched with interest the celebration. Mr. Williams has been present at a number of such gatherings, but nowhere, he said, had he seen a better program or a more pleased crowd.

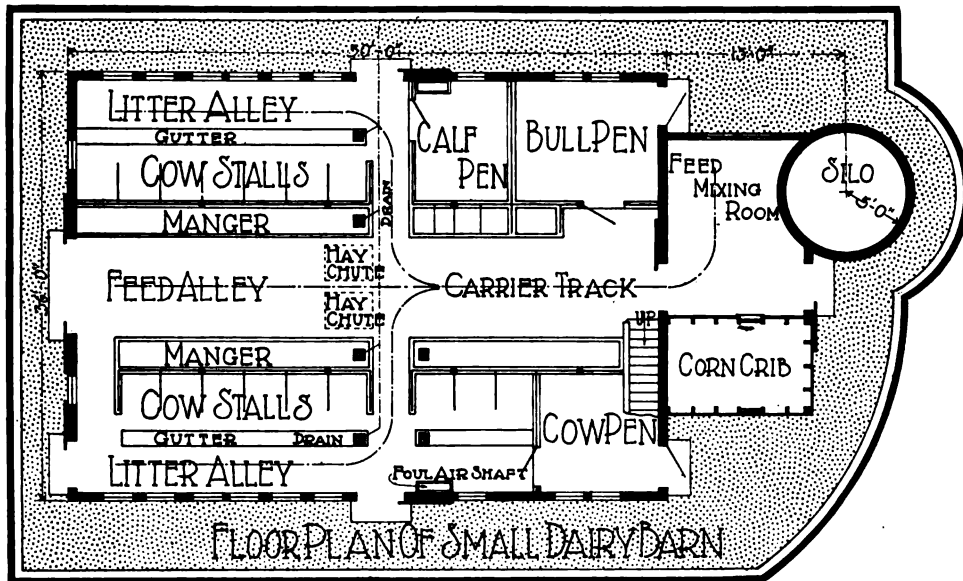


Garage and Salesroom of H. J. Rodgers, Ford Dealer, at Waverly, Ill. This is a new brick building, with stucco exterior, 66 by 140 feet. The front is used as a show and salesroom, while the rear is the garage. Across the street to the left are the service station and implement warehouse. Mr. Rodgers has a rather large quota of Ford cars and trucks and Fordson tractors to dispose of annually, but he never fails to exceed his quota.

FARM MECHANICS BUILDING DESIGNS



ATTRACTIVE FIVE-ROOM FARM HOME. Comfort and contentment are pictured in this farm home. Its wide, inviting porch, the brick chimney denoting a fireplace and the white exterior all give the impression that a happy family resides here. The house is not large, containing five rooms, living and dining rooms, kitchen and two bedrooms, as well as a bathroom and washroom. How the rooms are arranged and their sizes are shown on the floor plan. The building is 33 feet, 6 inches wide, and 37 feet deep.



S MALL DAIRY BARN. Here is a good-looking dairy barn for the farm that keeps a herd of a dozen or fifteen cows and houses them so that they will be healthy and productive. The building is 36 feet wide and 50 feet long and contains 15 cow stalls, a calf pen and a pen for the herd bull. Connected with it are silo, corn crib and feed room. Overhead there is mow space for the winter's supply of hay and other roughage. The building is of frame set on a concrete foundation and has a concrete floor in the stable. The stable is provided with ventilators and is equipped with the modern labor-saving barn fixtures.

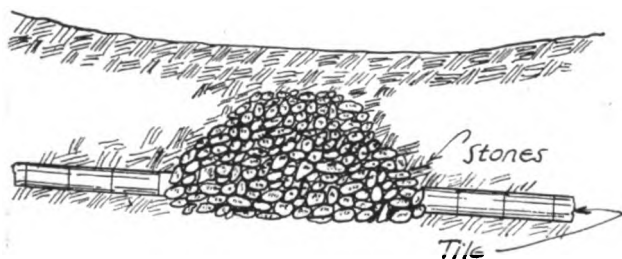
Tile Drainage Pays

One Acre of Well-Drained Farm Land Will Yield as Much as Two Acres Poorly Drained

By R. U. BLASINGAME

FARMERS of Iowa have spent about \$200,000,000 for land drainage. This is equal to about half what the Panama Canal cost. Does drainage pay? Iowa ranks about first among the states in agriculture. Up to 1910 85 per cent of all the clay drain tile manufactured in the United States was used in Ohio, Indiana, Illinois and Iowa. There is very urgent need of drainage in Minnesota, Wisconsin, Michigan, Arkansas, New York and along the coast from New Jersey to Texas. In fact, every state has gigantic drainage problems which have been untouched.

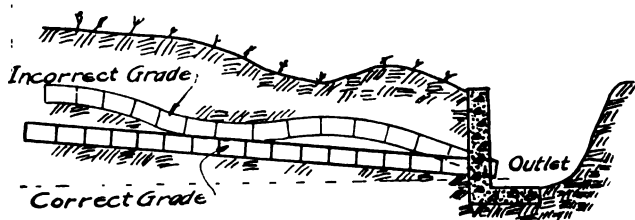
It often happens that a farmer will rather buy additional land at market price than drain that which he has. His desire is to acquire more land, under the false idea that his prosperity will be measured by the number of acres of land in his possession. He does



Stone Surface Inlet

The Water Will Enter the Surface Inlet and Drain Away in a Short Time.

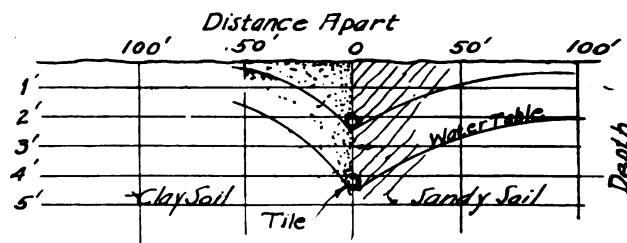
not appreciate one acre of well-drained land may yield him a greater income with half the labor and expense of cultivation than two acres of poorly drained land. He does not realize also that quite often draining the land which he already owns would cost about one-half what he pays for additional land. The extra land may be bought with the hopes that values will rise. The real value of land is regulated by its improvements and productiveness. The land owner who waits for values to be raised thru the improvements made by the other fellow is not a desirable citizen because he expects to gain thru his neighbors' improvements.



Tile Laid on Correct Grade Are Much More Efficient Than Those Laid on Irregular Grade.

How Tile Drains Benefit Land

Tile drainage benefits land in the following ways: As the excess water is drawn out of the soil air is drawn in. Air is necessary to oxidation and other chemical actions that liberate plant food, it is necessary to the growth of desirable micro-organisms and to



Tile in Sandy Soil May Be Placed Deeper and Further Apart Than in Clay Soil.

the growth and development of plant roots.

As the water is removed from the soil it becomes warmer, which improves seed germination.

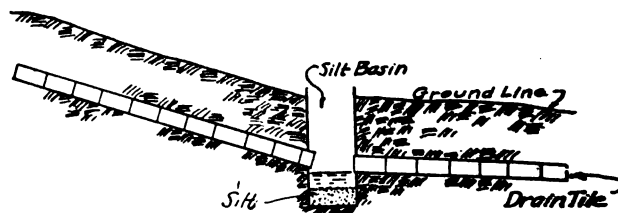
Lessens effect of drought because removal of excess water promotes deep root growth early in the growing season.

TILE TO DRAIN ONE ACRE OF LAND

Distance apart of tile in feet	No. feet of tile per acre
30 feet apart.....	1452 feet of tile
50 feet apart.....	872 feet of tile
100 feet apart.....	436 feet of tile
150 feet apart.....	291 feet of tile
200 feet apart.....	218 feet of tile

Spacing of Tile

The proper spacing of tile will depend somewhat



Where a Tile Changes from Greater to Lesser Grade or Where Several Tile Join a Silt Basin Will Prevent the Tile from Stopping Up.



Outlet Protection

upon the depth at which they are placed and upon the nature of the soil. The passage of water laterally and downward is retarded in fine soil, such as clay. Thus drains may be placed further apart and deeper in sandy soils than in clay. In soils ranging from sand to sandy loam, drain tile may be placed from

150 to 250 feet apart and probably 3 to 3½ feet apart, while in clay and silt it may be necessary to place them as close together as 30 to 40 feet apart and 2 to 2½ feet deep. It is almost impossible to give definite rules for depth and frequency of tile drains without examining the soil.

Drain Construction

The outlet must be the lowest part of the system. The outlet should be protected by a stone or concrete wall. Always begin at the outlet or lower end to lay tile. At the end of each day the tile should be covered a few inches to prevent dislocation in case of rain. It is a good idea to place top soil around the tile rather than clay because water passes thru the loamy soil more readily.

When a drain changes from a steep to a less grade a silt basin should be installed to prevent filling of the tile. The silt basin should be large enough to allow cleaning. It should be made of durable material such as brick, sewer pipe or concrete. The bottom of the silt basin should be about 18 inches below entrance of tile.

Tile drains laid on a correct grade will give far better service than when laid on irregular grade. The only way to secure a good grade is by the use of a level. It costs just as much to install drain tile on a poor grade as to lay them on a good grade.

Surface inlets are very often necessary where the tile passes under a low place or "pot hole." The water will have a tendency to stand in such a place and

drown out the crop or remain wet and delay plowing in spring. This is especially true of clay soil. A surface inlet may be built like a silt basin with a screen at the top or sides similar to the surface inlets used in paved streets, or may be constructed of stone loosely piled around the drain as illustrated.

The lateral drain should enter at or near the top of the main drain and enter at an angle down stream of out 30 degrees. The water enters the tile at the joints. These joints should be placed as close together as possible to keep out silt.

The crooked tile should be thrown out and used on curves if any lines are to be curved.

It is a good idea to buy Y tile for the entrance of the lateral into the main. It will save labor and secure good joints.

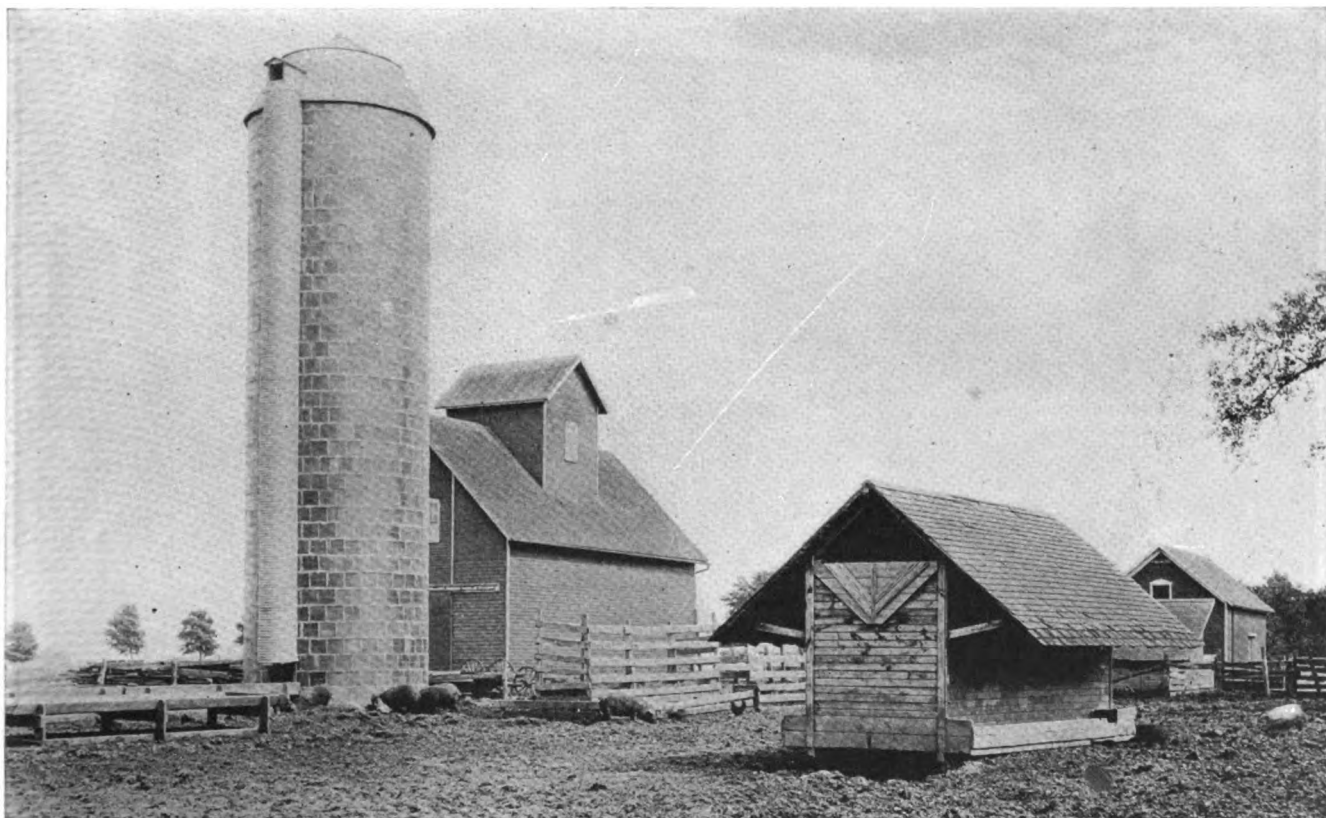
The first essential to soil fertility is good drainage.



Mowing Saves Moisture in Sod Orchards

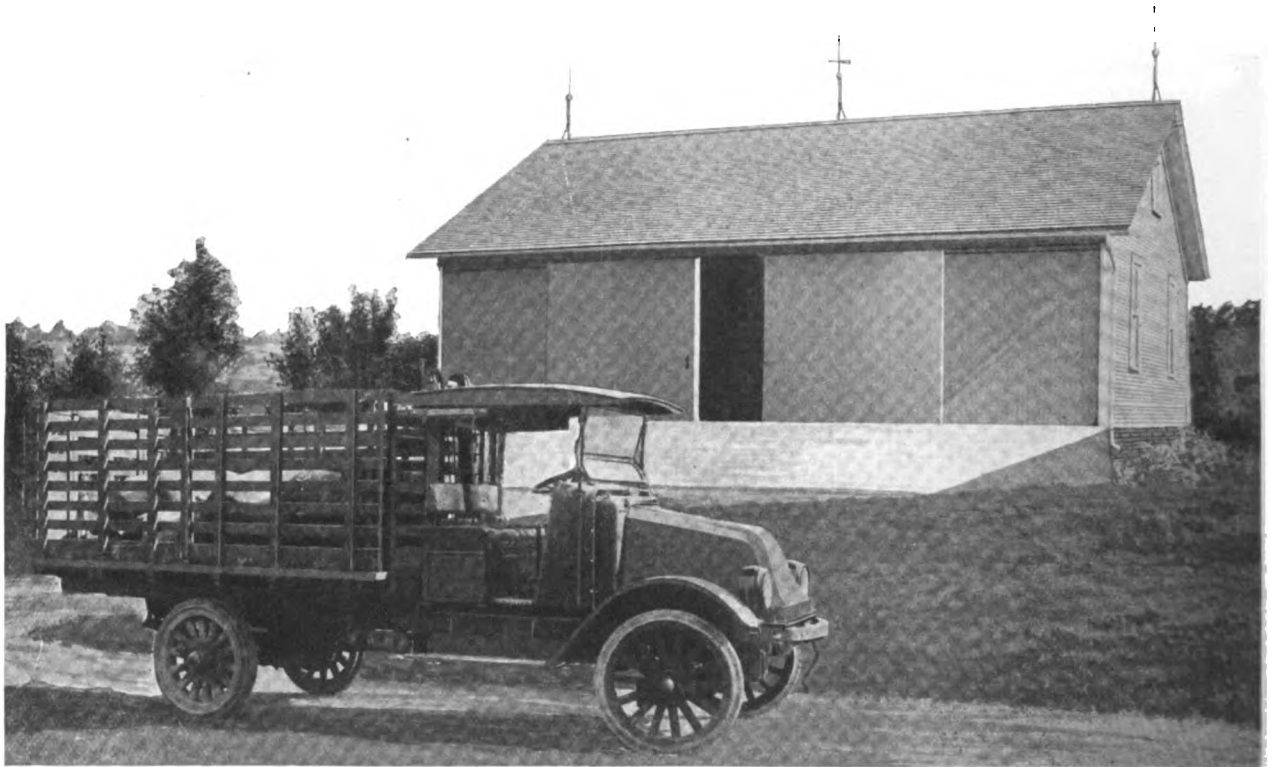
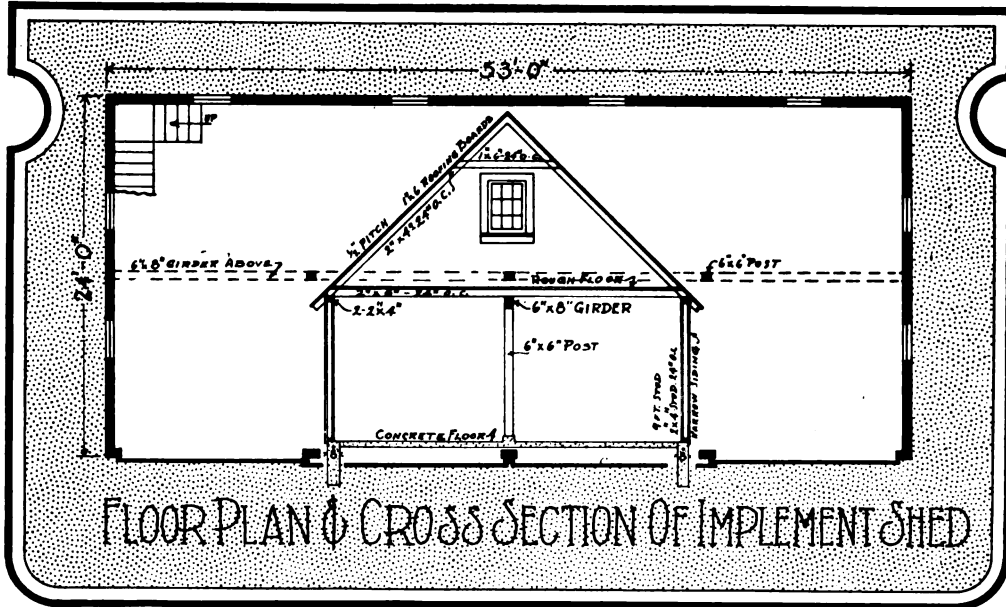
ROBBERING the apple trees of moisture and cutting down the size of the fruit, vigor of the foliage and ultimate yield of the tree, heavy growths of weeds and grass in sod orchards in many states are causing consistent loss.

Mowing will greatly reduce this loss, advises the New Jersey Agricultural Experiment Station, which goes on to recommend that grass and weeds should be allowed to remain on the ground as a mulch after mowing, to hold moisture and add organic matter to the soil.



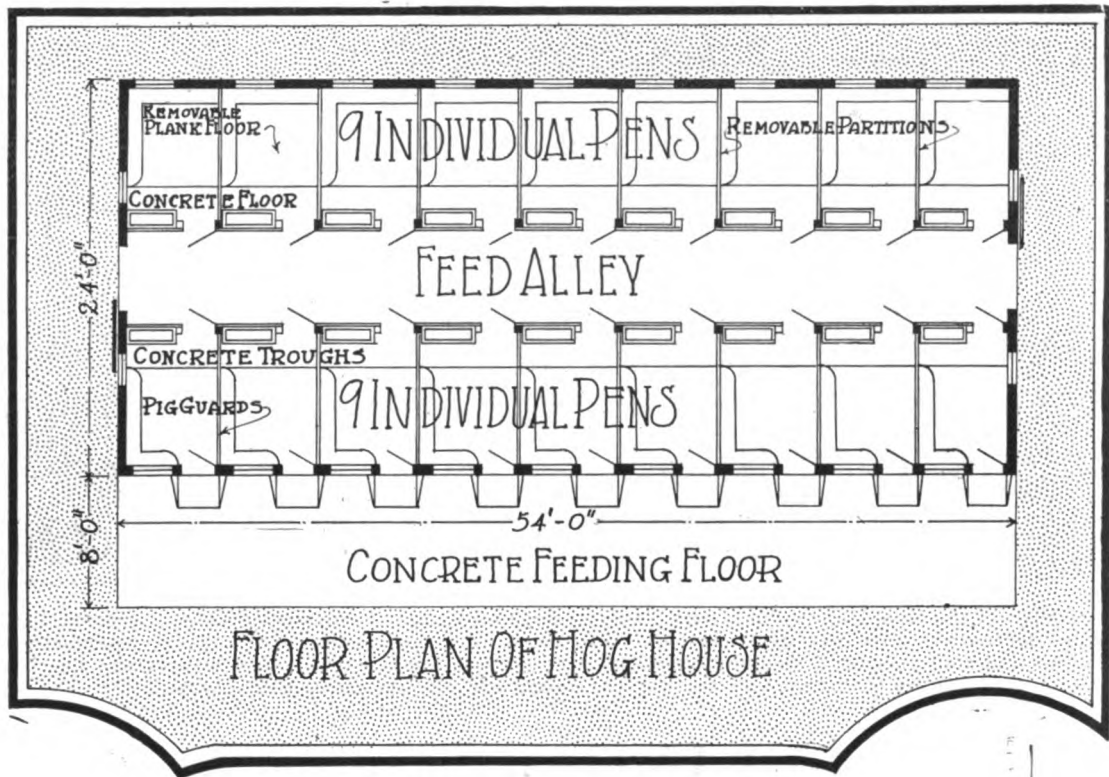
Well Arranged Building Group for the Cattle or Hog Feeding Establishment. The high corn crib holds the ear corn and grain and the silo the fresh feed. In the lot is a good type of self-feeder. All are convenient and save labor.

FARM MECHANICS BUILDING DESIGNS

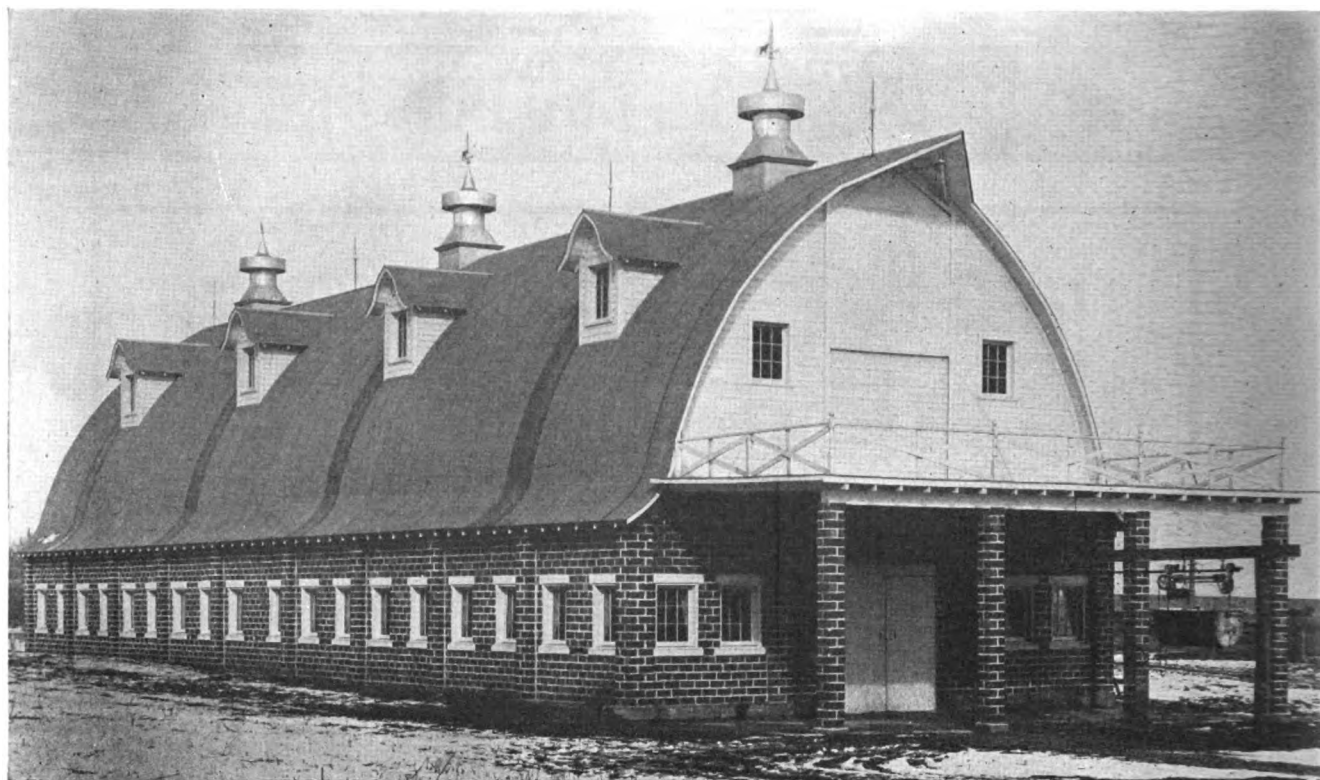


IMPLEMENT AND MACHINERY SHED. It soon will be time to put the tillage and harvesting machines and the tractor under cover for winter, for they depreciate rapidly when left outside. This is a good, weather-tight and inexpensive machinery shed. It is easy to build, there being only the three walls and roof, while the fourth side is closed by sliding doors. A cross-section of the building, showing the materials used and methods of construction is shown with the floor plan. The building is 24 feet wide and 53 feet long.

FARM MECHANICS BUILDING DESIGNS



ECONOMICAL BUILDING FOR THE HOG FARM. The saw-tooth, or "Iowa" hog house is popular with those breeders of hogs, who plan on having their sows produce two litters a year. Facing the South, the window arrangement gives the pens the benefit of every bit of early spring sunshine and prevents the little pigs from becoming chilled. The house shown is 54 feet long and 24 feet wide and contains 18 pens, nine on each side of the feeding alley which extends thru the center of the building. Each pen is fitted with rail guards to protect the pigs from being smothered by their mothers and has a removable plank floor. The pens are connected with an outside feeding floor, connected with the pens by small doors at the floor line.



Exterior View of the New Hollow Tile Dairy Farm on Superior Farms, Owned by Gruel Bros., Hobart, Ind. The stable accommodates forty-eight pure-bred Holsteins and Guernseys. All the modern dairy stable equipment—ventilators, steel stanchions and stall partitions, drinking cups and litter carriers are installed. The owners say this barn is easily kept at an even temperature in winter, and the work of caring for the animals is done easily.

Exceptional Dairy Farm Buildings

Hollow Clay Tile Barn and Milk House, Modernly Equipped, Prove Their Worth,
Say Gruel Bros., Owners of Superior Farms, Hobart, Ind.

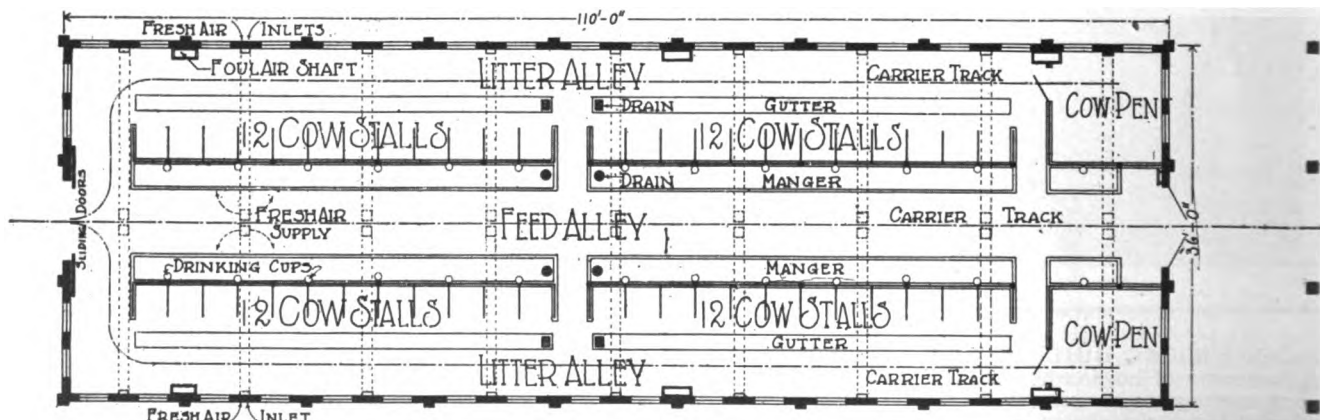
PRODUCTION of certified milk requires careful handling of the milk from the time it leaves the cow's udder until it is bottled and sealed. Cleanliness is the prime essential, and to secure cleanliness the most modern dairy buildings and equipment are necessary.

Superior Farms, owned by Gruel Bros., near Hobart, Ind., produce certified milk for the Chicago market, under the approval of the Milk Commission of the Chicago Medical Society. The herd at Superior Farms consists of about fifty head of pure-bred Holsteins

and Guernseys and they are housed in quarters that are the pride of their owners.

The Gothic-roof barn that contains the cow stable was built recently, as was also the milk house and bottling plant, both of which are shown in the illustrations. Both buildings are of hollow clay tile, set on a concrete foundation and are exceptionally well-built buildings.

"Our new barn is of hollow clay tile and for farm buildings we cannot speak too highly of them," says the Gruel Bros. "We have always been believers in



Floor Plan of the Cow Stable in the Hollow Tile, Gothic-Roof Dairy Barn on Superior Farms.



The Milk House, Containing the Equipment for Producing Certified Milk on Superior Farms.

permanent buildings and selected this material when we decided to erect the barn and milk house.

"The barn is 36 by 110 feet and is about 31 feet from the ground to the ridge of the roof. The ceiling of the cow stable is 8 feet high, giving each cow 660 cubic feet of air space and 6 square feet of window space.

"The barn is absolutely firproof and the stable has a steel ceiling. Steel equipment, including stall partitions and stanchions, individual drinking cups and carrier system, was installed. The equipment has all the labor-saving dairy barn devices, and is lighted by electricity and has the very best ventilating system."

An unusual feature of the exterior of the dairy barn is the balcony at one end. The balcony is 13 feet from the ground, a height that permits a load of hay to be driven under it. A large trap door 8 by 14 feet, is set in the floor of the balcony, so that hay may be hoisted to the track at the peak of the roof.

"We built this balcony in place of a driveway," say the owners, "as a driveway would cut the barn up somewhat for our purpose. We find it very handy to work under in all weather, as we often have small jobs to do. It also improves the appearance of the building and prevents rain from driving in when the doors are open. This balcony is at the south end and it is from the south that we receive the heavy, blowing rains.

"The milk house is also of hollow clay tile and is 36 by 40 feet in size. It contains a boiler room, wash room, bottling room, packing room and a large icebox.

"Our experience with these buildings has taught us that in the dairy stable we can keep a more even temperature at all times and that they are easily kept spotlessly clean. This construction is not much more expensive than the average and the upkeep we find is lower."



SOMETIMES deep cultivation in the garden does much more harm than good because it cuts off the roots.

Fertilizer Made on Farm Is Best

FARMS could produce more nitrogenous fertilizer from the air at a more rapid rate than Henry Ford ever hopes to at Muscle Shoals, and if they were efficiently managed these farm fertilizer factories would supply more available potash than is normally imported from Germany.

Limestone and acid phosphate have often been found necessary for complete efficiency, but with them supplied the farm factories usually furnish most of the available nitrogen and potash necessary for the coming field crops. Because farmers are finding this to be true, they are making their own farms more efficient producers of fertility before they begin to think or buying too much of the commercial product.

Red and alsike clover are the more common nitrogen-fixing units, tho alfalfa, beans, peas and the other legumes are playing their part on many farms. Each ton of clover hay produced represents the fixation of as much nitrogen as is secured in a ton of 2-8-2 fertilizer. Where this clover is fed on the farm and the manure carefully conserved, much of this nitrogen is added to the soil.

To develop a high degree of efficiency in this nitrogen factory, it therefore becomes necessary to get a large yield of clover. In many sections this means lime, and almost universally it requires liberal quantities of acid phosphate on the preceding grain crops.

Where the farm nitrogen factory is adequately utilized, much is also done to increase the supply of available potash for crops. Where the soil is well supplied with total potash, the careful return of farm manure or a large proportion of the farm-produced organic matter in some other form increases rather than lessens the supply of available soil potash.



TREAT your hens for lice. They will appreciate it and repay you in extra eggs and lice-free chicks.

Operation and Care of Tractor



Farm Tractors Are Quite Generally Used for Work in the Harvest Fields. Extreme heat does not bother them, as it does horses, and the grain farmer is enabled to go ahead with the harvesting rapidly.

Some of the Troubles the New Owner May Experience and How to Meet Them

The First of a Series of Three Articles

By F. M. SERVICE

WITHIN recent years the tractor has become of such importance in farm life that everybody should be familiar with its general operation, its troubles and their remedies. Originally the tractor was looked on by most farmers as an experiment, and rightly so, for the builders of the earlier ones made them as heavy as possible and they gave unlimited trouble and were generally not dependable. Today the tractor is a wonderfully reliable and efficient machine. Field troubles have become almost negligible and even the most inexperienced novice, who knows barely enough to steer and shift gears properly, can operate it for hours on end without fear of getting stranded. There are, of course, troubles that will develop from time to time due to defects, poor adjustments, etc., things that will always be found in any piece of machinery, no matter how carefully

assembled. We are going to go thru the various difficulties that will be encountered by the new owner, and describe their causes and remedies in such a way that the operator who has no mechanical knowledge can trace down his own problems and correct them himself.

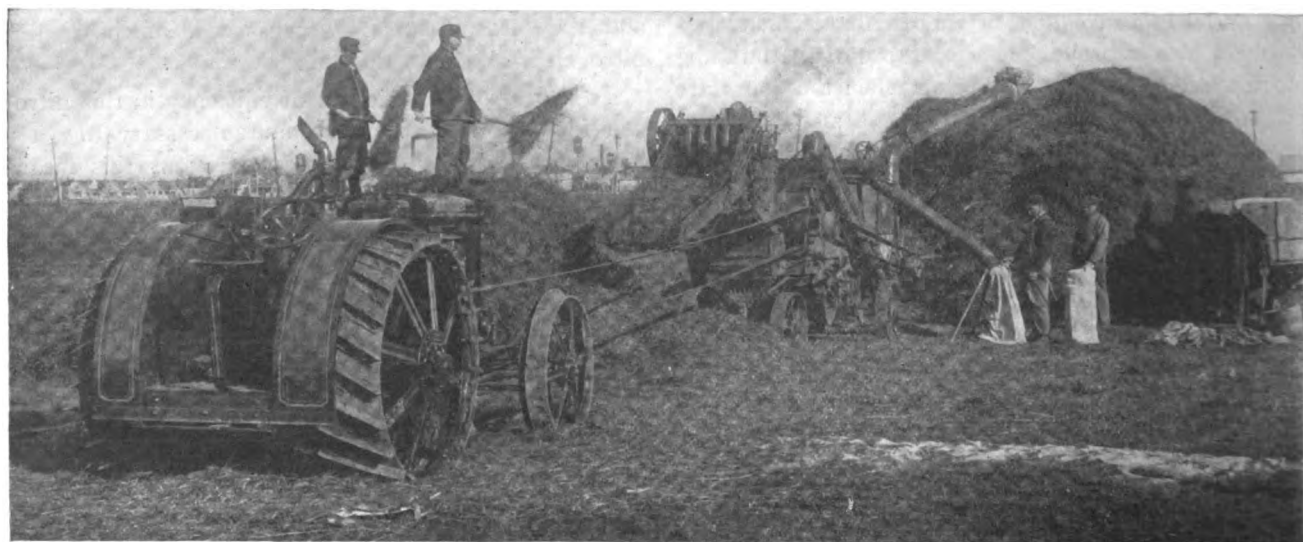
We will not attempt to describe the overhauling of tractors in this article but will keep to a diagnosis of the things that may happen while it is being operated.

Motor Fails to Start

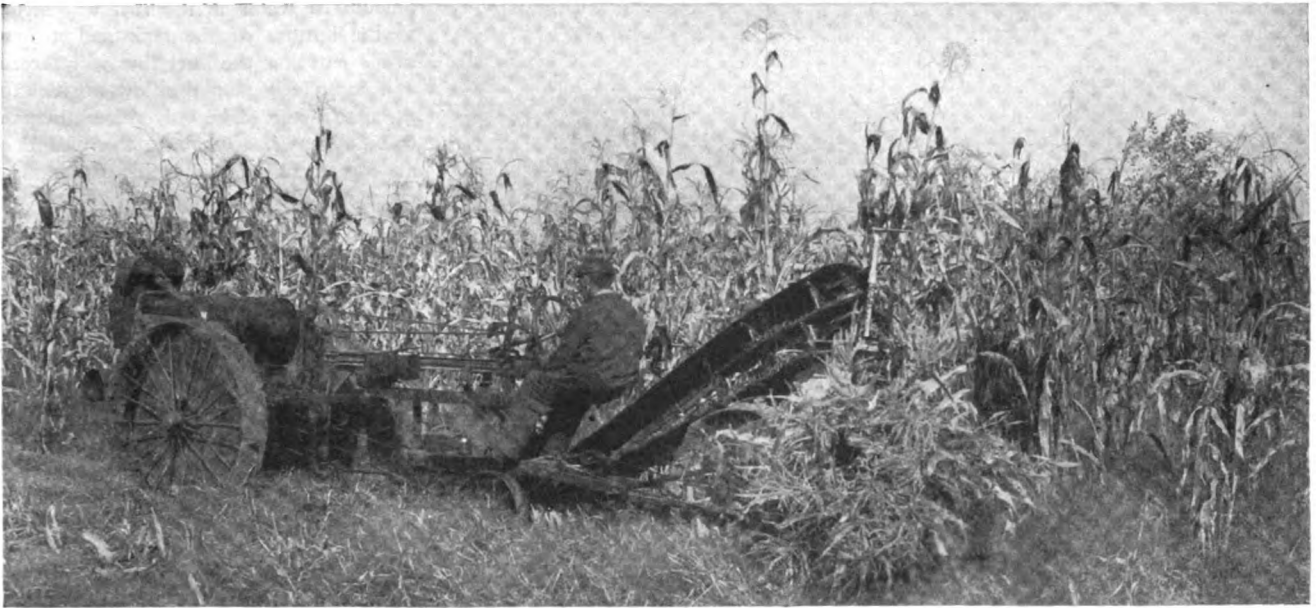
(1) *Gas Mixture Too Lean or Gasoline of a Poor Grade:* A very lean mixture will keep a cold motor from starting, as the mixture drawn into the cylinders and compressed does not contain enough fuel to cause an explosion, when the spark plug fires. To correct this,

open up the fuel adjustment valve in the carburetor two turns or more and later when the motor is started and warmed up the carburetor can be properly adjusted as described below. If a poor grade of gasoline is the cause of the engine not starting, it can be told by saturating a stick with it and seeing how easily it will ignite. If it is of a poor enough grade to cause starting trouble, it will not burn and acts the same as kerosene.

(2) *Water in the Fuel:* Water in gasoline will always sink to the bottom of the fuel tank, as it is heavier than gasoline. Consequently it will flow thru the feed pipe into the carburetor, where a few drops entering the needle valve will cause a stoppage, which will not permit the gasoline to pass into the mixing chamber. To find if this is causing trouble, open up the pet cock or plug on the bottom of the fuel tank and



The Old "Traction Engine" is Rapidly Being Replaced by the Tractor as Power for the Threshing Machine. Smaller sizes of threshers now on the market, at correspondingly lower prices, make it economical for owners of large farms to own their threshing outfits, which, coupled with the thresher, cut costs of threshing.



The Tractor Coupled with a Corn Binder Makes Short Work of Harvesting the Corn Crop. The greater power of the tractor speeds up this heavy work.

drain off about one-half pint; the water will be plainly seen. If any is found, drain the carburetor or remove the float chamber and clean out.

(3) *Points on Distributor, Magneto or Coils Not Properly Adjusted:* On tractors equipped with magneto or battery distributor ignition, if it is suspected that the points are causing the starting trouble, remove the distributor cap and watch them make and break, as someone turns the engine over with the crank. They should open between $1/64$ and $1/32$ of an inch and when closed should come together fairly and squarely and face each other with clean surfaces. Where the points are found to be badly pitted, they can be filed off and if too badly worn, replaced. Most battery distributor points are made up of two layers of metal, the top one being tungsten and the under one steel. Care must be taken that the tungsten is not filed entirely away, as the ignition will not work where the points are down to the steel. On tractors equipped with coil units the vibrators may be adjusted too closely or too far apart to permit the engine to start. The correct adjustment is a trifle under $1/32$ of an inch between the points, when the bottom vibrator is held down with the fingers and there must be enough tension to the lower vibrator spring to bring it sharply against the upper joint when suddenly released.

(4) *Water or Congealed Oil in Commutator:* On tractors of the Fordson type, congealed oil or water in the timer will prevent starting. If no current is getting to the spark plugs, remove the timer shell and clean, inspect the roller to see that the small spring is not broken and is keeping a good tension on the roller arm. Do not use heavy oil to

lubricate the timer as it may congeal and prevent the roller from completing a circuit with the contacts on the shell. Always use a light grade of oil and plenty of it.

(5) *No Current to the Spark Plugs:* This may be due to a shorted magneto or magneto plug, or if battery ignition a dead coil or loose or broken terminal supplying current from the battery. The easiest way to find if the current is being supplied to the plugs is to remove a spark plug and lay it on the top of the motor or the cylinder head. Replace the spark plug wire on the terminal of the plug and crank the engine several times, watching to see if the spark leaps the gap at the plug points. If it does not, start tracing back, testing each point at point at which the current passes, until the source of supply or the place where the current ceases to travel

is reached. For instance, if it is found that in a battery system the current is good up to the coil but is not being delivered thru the coil, then a dead or shorted coil is the cause of the trouble and it must be replaced with a new one. Or if it is found that the current reaches the breaker points but does not go thru them, then they are not properly adjusted or are too badly worn to make a contact. If there is magneto ignition, and the current will jump at the spark gap, but not at the spark plugs, the trouble is a shorted distributor or distributor brushes, and the repairs had best be done by an expert repair man. In a tractor like the Fordson a dead magneto may be caused by an accumulation of foreign matter at the magneto contact point. This can be easily removed and cleaned.

(6) *Gasoline Supply Shut Off:* Most



Hay Mowers Coupled Directly with the Driving Mechanism of the Tractor Make a One-Man Hay Harvesting Outfit That Is Appreciated When Hay Is Ripe and Time Is an Essential Factor in Getting the Crop Cut and Put Away.



Tandem Discs, Hitched to the Tractor, Walk Right Along with the Discing, Either Following the Plowing or in the Stubble Fields. With the tractor the discs can be set for deeper cutting and a better seed bed is the result.

carburetors have a pet cock or small drain plug on the bottom of the float chamber, and by removing this, it can be found if there is a free flow of gasoline from the carburetor. If not, remove the feed line and blow out and inspect the sediment screens at the car-

buretor and at the fuel tank for stoppage. In a Fordson, lack of water in the air washer will prevent the gasoline from being drawn into the mixing chamber.

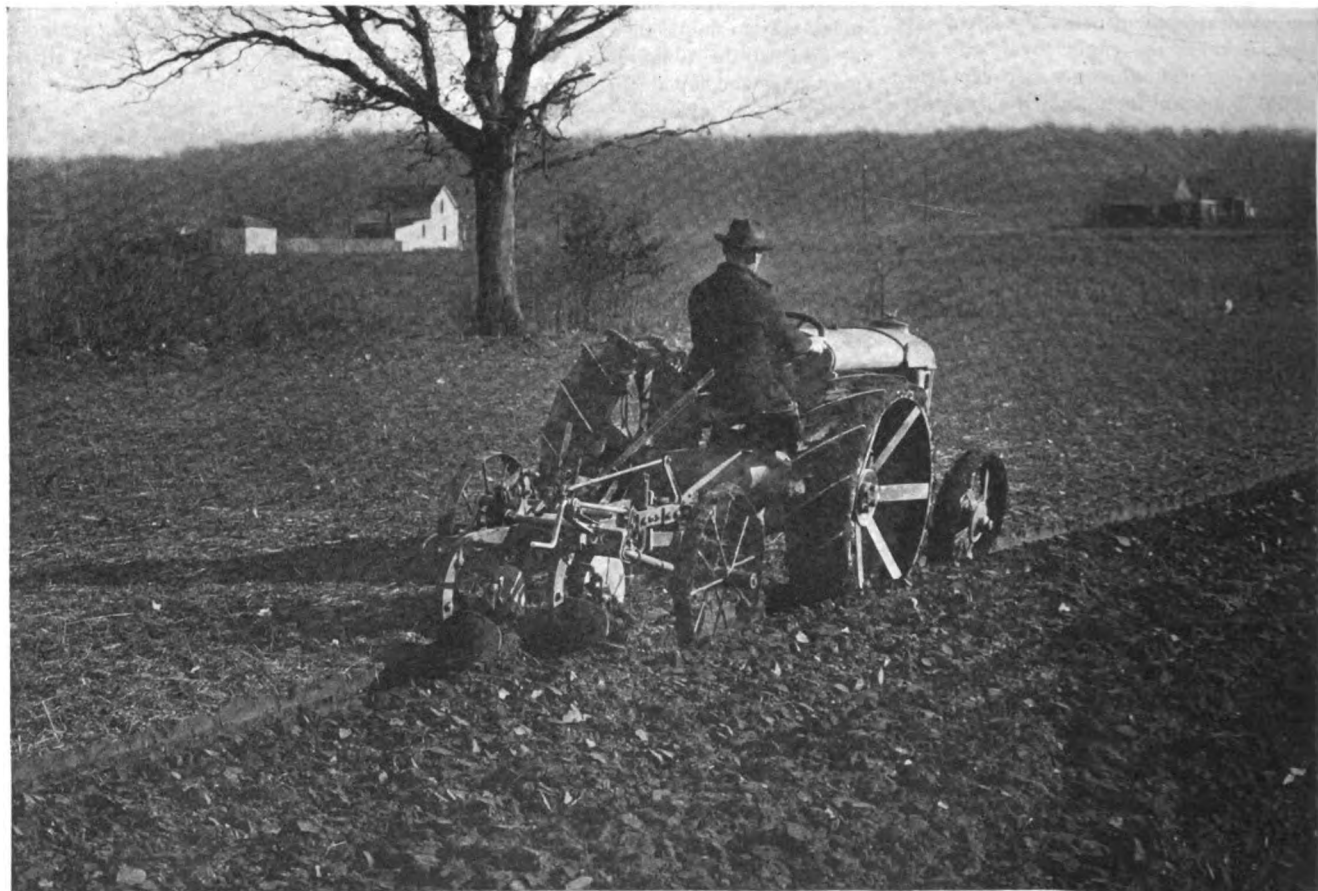
(7) *Water Frozen in Bottom of Gasoline Tank:* In the winter a very small

amount of water in the fuel will settle to the bottom of the tank and a few drops entering the fuel line will freeze and completely stop the flow of fuel to the carburetor. The only remedy where this happens is to remove the feed line and sediment bulb and thaw out; also drain off all fuel in the tank and strain thru a chamois skin to remove the remaining water.

(8) *Water on Spark Plugs, Wires and Magneto:* Water is a conductor of electricity and, as a current will always follow the lines of least resistance, it follows that when the magneto, coils, plugs or wires become soaked with water, they will become shorted and cease to function. Where this happens, the only thing to do is to get the tractor into a warm place and allow it to dry thoroughly before attempting to start it.

Motor Lacks Power and Runs Irregularly

(1) *Poor Compression Due to Leaky Valves:* To test the motor for compression, lift the engine crank up slowly several times, as each piston comes up in the cylinder on compression. The crank as it is lifted, should have a spring feel to it, and if released when halfway up, the compression, if good, will turn the motor back again until that piston is down. This spring feeling to the crank must be of equal resistance on



Deep Plowing, with Well-Turned Furrows Increase Crop Production. Tractor hauled plows do this work rapidly and at low cost, and besides take much of the extreme hard work out of the job.

each cylinder, and if it is found that one or two cylinders have it, but that the crank can be lifted on others without any apparent resistance, it is a good indication that the valves need attention. Often where the valves are very bad the compression can be heard leaking past them as the motor is cranked.

(2) *Carburetor Not Properly Adjusted*: A lean mixture has too much air and not enough fuel. A rich mixture has too much fuel and not enough air. A rich mixture will make the motor gallop and will cover the cylinders, pistons, etc., with soot, and it can always be told by the heavy exhaust smoke. The motor will have a tendency to choke up and misfire at low speeds. Too lean a mixture will result in backfiring or popping back in the manifold especially when the motor is quickly accelerated, and the engine will lack power. The proper way to adjust any carburetor is to warm up the engine, and then set the throttle so the motor is running at a good speed. Now cut off the flow of fuel by screwing in or down the needle adjustment or the nozzle as the case may be until the motor begins to pop and misfire, then very gradually increase the fuel supply by screwing out on the adjustment, until the point has been reached where the motor reaches its highest speed and no smoke comes from the exhaust pipe. In cold weather it will be found necessary to increase the amount of fuel in the mixture slightly.

(3) *Dirty Spark Plugs*: Dirty spark plugs are usually a result of too rich a fuel mixture, or from an excess of oil being carried in the crankcase. If of the one piece type, they can be cleaned by scraping the carbon deposits off with

a small knife and then washing with an old tooth brush dipped in gasoline. If you are using the two-piece type of plug, they should be taken apart by taking off the pack nut which holds the porcelain or mica in place. In assembling the plug, care should be taken to see that the pack nut is not tightened so tight that the porcelain is cracked. Never scrape off the glazed surface of the porcelain, as it will carbonize very quickly when this is done. Spark plug points being too close or too far apart will cause an engine to run irregularly. The correct distance between the points is $1/32$ of an inch.

(4) *Air Leak in Intake Manifold*: If the gaskets between the carburetor and the manifold or the engine, are not air tight, the engine on each intake stroke will draw in extra air which is not mixed with fuel. This will cause the motor to die down and misfire at low speeds. To test the engine out for this trouble, set the throttle down to the point where the engine starts to miss, and squirt gasoline from an oil can on all the gaskets and connections between the carburetor and the motor block. If there is an air leak the gasoline will be drawn into the cylinders and the engine will speed up, only to die down when it has sucked it all in.

(5) *Weak Exhaust Valve Springs*: A weak valve spring will allow the compression to escape under the valve before the valve is fully closed. This can be found by placing a large screw driver between the coils of the valve spring while the motor is running. If this extra tension causes the motor to pick up speed, the spring must be weak and should be replaced with a new one.

(6) *Too Much Distance Between Valve Stem and Push Rod*: If there is too great a distance between the valve stem and the push rod, then the life of the valves is reduced and the power of the motor is diminished. The average clearance recommended by most tractor manufacturers is .020 of an inch and must never be greater than $1/32$ of an inch or less than $1/64$ of an inch. Nearly all motors have adjustable push rods, but where these are not used it is best to replace the valves and push rods with new ones, if they are worn badly.

(7) *Commutator Worn*: This trouble applies only to tractors of the Fordson type using a low tension magneto system. If the contacts or the roller in the timer become badly worn, they will not make a perfect path for the current and will cause the spark plugs to fire irregularly, making the motor miss badly. Where this condition is found, the worn parts must be replaced with new.

(8) *Magneto or Battery Coil Weak*: A weak magneto or a weak ignition coil will cause a motor to run badly and lack power. This is due to the fact that the high tension current when delivered to the spark plug must jump the gap between the points under a compression of between 50 and 90 pounds. It takes a much more powerful current to do this, than it does to leap the same gap in the open air. Therefore, if the magneto or coil is weak the spark plug will often misfire. Any battery or magneto ignition system, when up to standard, should deliver a high tension current that will leap at least $3/8$ of an inch, and if does not, it is not strong enough to properly fire.



In the California Fruit Orchards Intensive Cultivation Between the Trees Is the Practice. In the foothill country a special crawler type of traction is applied to the tractors to get more efficient work in the orchards that are on the sides of the hills.

Safe Storage for Potato Crop

Properly Constructed Warehouse Holds Tubers at Right Temperature and Provides Necessary Ventilation

By MARTIN TRAVIS

POTATO growers in the northern section of the country use different methods of storing their crops thru the winter. Some employ the old method of a straw-lined trench, with a straw covering and earth thrown over it. Others have built underground storage cellars of timber or concrete. In some sections, notably Maine, where huge crops of potatoes are grown, the tubers are carried thru the winter, or until such time as they are marketed, in warehouses which are provided with artificial heat. In view of these facts, investigators for the U. S. Department of Agriculture say, an intensive study of the subject has not been made and there is not a great deal of reliable data upon which to base conclusions.

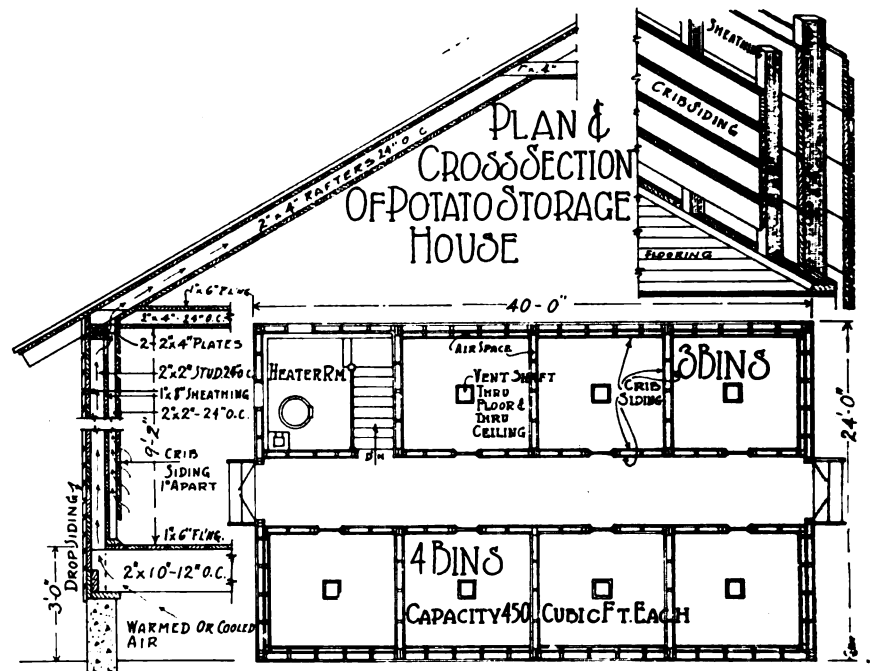
The reasons for this lack are given by William Stuart, of the Federal department, in Farmer's Bulletin No. 847 on "Potato Storage and Storage Warehouses." "When potatoes are plentiful and relatively cheap," says the bulletin, "little attention is given to such wastage and loss as usually occur in storage; in fact, a considerable loss was considered inevitable. With high prices and scarcity of supply the need of conserving the entire production for seed and food purposes is of the utmost importance."

However, it has been demonstrated, the bulletin continues, that losses in storage can be largely prevented by the proper construction and intelligent management of storage houses. When it is considered that potatoes are one of

the most important food crops in the United States, it is sheer economic waste to fail to provide proper means of conserving the crop.

The primary object of storage is to

and must be stored, the early or truck crop being disposed of direct from the field as harvested. The factors provided by the storage warehouse must be of such a character as to protect the pota-



Floor Plan, Cross-Section and Wall Detail of Storage Warehouse for Potatoes.

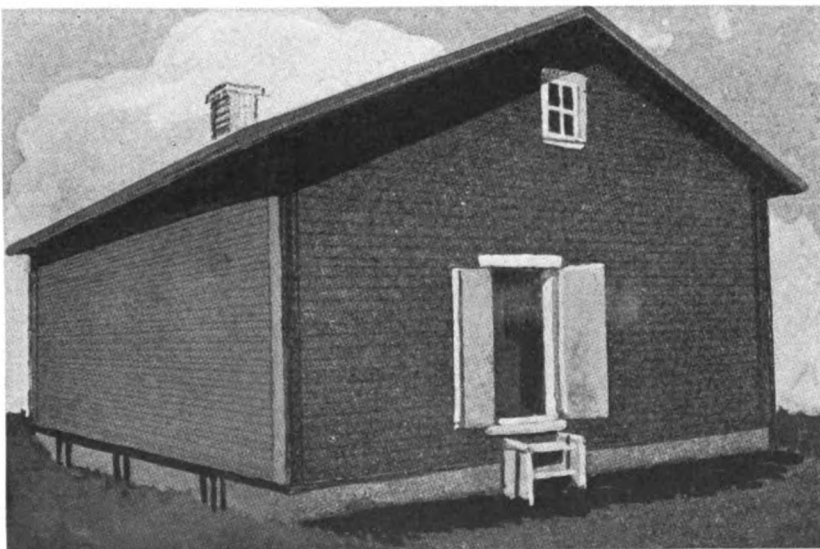
hold potatoes, which are more or less perishable, in a salable condition thru-out as long a period as may be economically desirable. The main, or late crop of potatoes is intended for winter use

toes from extremes of heat and cold and from the light. Other facts of less importance, perhaps, are humidity and aeration and the size of the pile or bin in which the potatoes are stored.

Various notions are current regarding the best temperature at which to hold potatoes in storage. The temperatures which are generally recommended are between 32 and 45 degrees, Fahrenheit, the freezing point of potatoes being between 26 and 28 degrees. To hold this temperature in the northern section of the country, where the principal Irish potato crops are grown, there usually must be provision for artificial heat, as well as storing the potatoes in a weather-tight building, with insulated outside walls.

It was with this idea in mind—holding an even temperature in the storage house—that the building shown in the accompanying illustrations was designed. Also it will be noted from the cross-section and detail drawing of the exterior wall, and from the floor plan, that good ventilation has been provided.

The warehouse shown is 24 feet wide and 40 feet long. It is constructed of first-class lumber, such as may be se-



A Storage Warehouse for Potatoes Has Walls That Are Insulated Against Heat and Cold to Better Maintain an Even Temperature. The building is so constructed that the crop may be well ventilated and artificial heat used in extremely cold weather.

cured at almost all lumber yards. The foundation is of concrete on which are set sills of 2x10-inch timbers, the floor line being 3 feet above the ground. The cross-section of the building in the left of the drawing and the detail of wall construction in the upper right hand corner, show the materials used and the method of construction.

It will be noted that the exterior walls are covered with drop siding, nailed to the 2x4-inch studs. Ship-lap sheathing is nailed to the inside of the studs, providing a 4-inch space between the interior and exterior walls. This acts as an insulation against heat and cold and also provides means for air circulation. A 2x2-inch timber nailed to the inside wall provides nailing space for the walls of the storage bins, which are of crib siding, permitting a circulation of air thru the walls of the bins. The floor of the building is laid of 1x6-inch matched flooring.

The building provides space for seven bins, each 8 by 9 feet, inside measurement. It is considered the best practice to extend the walls of the bins up only 6 feet, to permit ease in filling and emptying and to provide plenty of air space above. These dimensions give a capacity of 450 cubic feet. Thru the center of these bins runs a vent shaft, which is perforated. The shaft runs thru the ceiling to the attic space, from which the air is drawn out by the roof ventilator. With the draft provided by the air space in the walls and thru the air shafts, a circulation of air thru the stored potatoes is assured. The outside air vents in the concrete foundation may be opened or closed as the temperature of the house demands.

For use in extreme weather, space at one side of the building is provided for a heating plant, the floors of the heater room being on a level with the ground. Flues from the heater are run to the space under the floor, so that the warm air may be carried thru the ventilators.

As stated in the beginning, the success of this building as a storage warehouse for potatoes depends upon good materials and construction, and, after the potatoes are stored, upon watchfulness to maintain an even, low temperature.



Threshing Clover Seed

By Earle W. Gage

IN order to secure the heaviest possible yield of seed or clover it is imperative that the hay containing the seed be threshed in dry weather. If threshing is done when the hay is somewhat moist, a quantity of the seed will not thresh out readily and, consequently, the yield will be reduced. It is therefore a very good



Threshing the Clover Seed, the Power Used Being a Gasoline Engine Mounted on a Truck.

policy to defer threshing operations until suitable weather prevails.

Threshing may be done with an ordinary threshing machine, altho the operation is somewhat slow. In order to secure all the seed, it will be necessary to run the material thru at least twice. When the clover is run thru the first time, the machine may be operated as for threshing grain. Heads and chaff will then be separated from the stalks without the latter being broken up too badly. In order, however, to get the clean seed separated out, the heads and chaff have to be run thru a second time after certain slight adjustments to the machine have been made.

A plate of sheet iron or a piece of hardwood should be fastened directly behind the cylinder, closing all the back except about 9 inches on the left end of the cylinder and all of the right end of the front part of the cylinder except one foot. If a small machine, with concaves on top of the cylinder, is used, the concaves may be left open. If a large machine, having the concaves at the bottom, is used, it will be necessary to close the small holes in the concaves, the object being to make all the material pass directly from one end of the cylinder to the other so that the seed, in passing thru, may be hulled perfectly.

The best machine for threshing clover seed, especially red varieties, is the clover huller. The clover huller separates seed from the shaff in one single operation and is therefore to be recommended whenever red clover seed is threshed. The extra amount of seed obtained by the use of the clover huller would soon pay for the machine where there is any considerable amount to thresh, say a total of 200 acres in one neighborhood. Aside from this, the amount of labor saved in threshing is reduced by half that required where the ordinary grain threshing machine is used.

Use for Old Tank

A FARMER, noting the gradual giving away of a wood slab water tank, decided to give it another use after it had been replaced by a new one in the feed yards. Tho only a few cows were being milked at the time the ice required to keep the milk at the proper temperature during the hot months was more than their frugal supply could long stand.

The tank was consequently set into



Old Stock Water Tank Used as a Cooler for the Milk.

the ground with only a few inches of the top protruding and this provided with a wood cover. The hoops were tightened and after the earth had been thrown back and water poured in thru a small pipe line, the staves quickly swelled until leakage was stopped.

That was several years ago. Since the solid earth supports the bottom and the earth fill relieves the sides of all outward pressure the tank had given good service, and is still good for a lot more.

And the best part of all is that, located as it is under an over-hanging elm and a small part exposed to the air, water within remains cool for a much longer time than would be the case were it above ground. It has long since paid for the tank that replaced it, in the ice it has saved.—DALE R. VAN HORN.



“BY AND large, the man who produces products suitable to his conditions and markets and sticks to it thru thick and thin is well off in the long run.”

Cool Breezes for Hot Folks

Electric Fans Bring Comfort Into the Home When the Mid-Summer Sun Makes Life All But Unbearable

By F. J. ST. JOHN

SOMEWHERE I seem to remember having read of certain highly favored individuals who, in the heated season, had their own especial little black boys whose sole job it was, while their master slept, to shoo away temeritous flies and keep a cool breeze stirring.

This matter of having a cool breeze during the heated season has been one to give mankind concern ever since civilization came to decree houses that shut out the air and sunlight, and clothes to cover one's skin and destroy that sense of liberty and freedom of movement which was and is enjoyed by the aborigines.

When we became civilized we began to suffer from the heat. Right away, of course, our instincts turned us toward means of ameliorating that heat and various devices have been employed to that end.

Cooling drinks may help some, for those who enjoy them. A trip to a colder climate is a luxury which a favored few are apt to adopt in order to escape the oppression of mid-summer heat. But the most effective means that can be employed is to create a breeze where you want it, sweep the warm,



There's Solid Comfort Where Artificial Breezes Blow.

dead air away and keep a live, cool stream of fresh air pouring thru the space surrounding you.

Someone told me, the other day, of visiting one time, years ago, in a country home where a complicated fanning machine was installed over the dinner table. It was rigged up with a pedal under one of the chairs. The small boy of the family had elected to sit in that

chair, and, by pumping vigorously with one foot on the pedal, he would keep the fan whirling, the while he kept his hands engaged in feeding himself. If he became too deeply interested in eating, the speed of the fan would drag, the breeze would die down and some perspiring member around the table would call on Willie for a little more speed. Then Willie would hump himself to his task and start a small cyclone above the table, which would gradually become a more moderate atmospheric disturbance as his appetite again put in its demands.

The most effective and the most practical way of getting a breeze where and when you want it, without question is by means of the electric fan. Any household that has electricity can have one or more of these breeze makers and drive out a whole lot of discomfort, accordingly.

It is exasperating to want a breeze and not be able to get it. You get your paper or your knitting or whatever it is you take along with you, when you want to settle down and be comfortable, and you start to hunt for the coolest spot about the place. You try this shady corner and that, hoping for a cool breath of air, but Nature isn't co-operating so very well and you get pretty hot. Then it is you begin to wish you could manufacture a breeze, maybe you'd like to make it a regular blast, that would sweep the still, warm air away and bring the live, stirring breeze in its place.

I imagine the man who first made the electric fan must have gone thru experiences like that, and I'll bet he patted himself on the back in deserved self-congratulation, when he first turned the electric button and felt the breeze of those whirring blades fanning his cheek. The statistical sharks can probably tell you how many millions have since bought their own electric fans and gone smiling thru a heated season, bathed in the cooling breezes which these fine electrical devices create. I have no idea how many there are, but I'm sure they have shown mighty good judgment in employing this artificial means of creating a breeze for the time and the place where it would do the most good.

It isn't just the matter of a little bodily comfort that is involved, either, but a downright question of better health. Everybody knows the weakening effect of a condition of continued



An Electric Fan in the Home Takes Away Much of the Discomfort During the Hot Summer Weather.



Well-Directed Breeze in the Dining Room Adds to the Comfort of the Dinners, and if Flies Have Gotten Into the House, Keeps Them Away from the Table.

heat. A few nights when the bedrooms are so hot that sleep is hard to secure, and what happens? Tempers are likely to get on edge, the physical body is weakened and resistance is lowered, then some pesky ailment has a chance to slip in and make life miserable for folks who should have been sleeping and getting the rest their tired bones demanded.

Just suppose, in one of these hot bedrooms, a good electric fan had been set going along before bed time, so that the air had been stirred and blown about and the room cooled. What a different place it would be in which to sleep and what a difference it would make to those who slept there.

In other places about the home the electric fan will serve a splendid purpose. In the kitchen there is bound to be more or less heat, if there is cooking going on, canning, baking or ironing. An electric fan, placed in a strategic position will beat any other contrivance for routing the heat-charged air and leaving the housewife's workshop cool and comfortable.

When it is mealtime, the fan will be carried into the dining room and its breezes will blow over the dining table while the diners eat in undisturbed enjoyment. Willie will have no divided task, no fanning machine to pump, but can give his entire attention to the one task of attending to the demands of a fine digestive system.

And when the evening meal is over and the family is ready to gather on a shaded porch, all together in comfort and harmony, in the ideal way that

families should do, that blessed electric fan (perched at the right angle to sweep the crowd with its inspiring breeze) will bring comfort and sweetness of mind, and help to insure that composure and content that presage a night of healthful sleep and rest.

Quite a poetic outburst about a mere electric fan, you say! Mebbe so! But just you try turning on one some time when you've been fighting the heat as a lot of us do, and you'll appreciate what I mean.

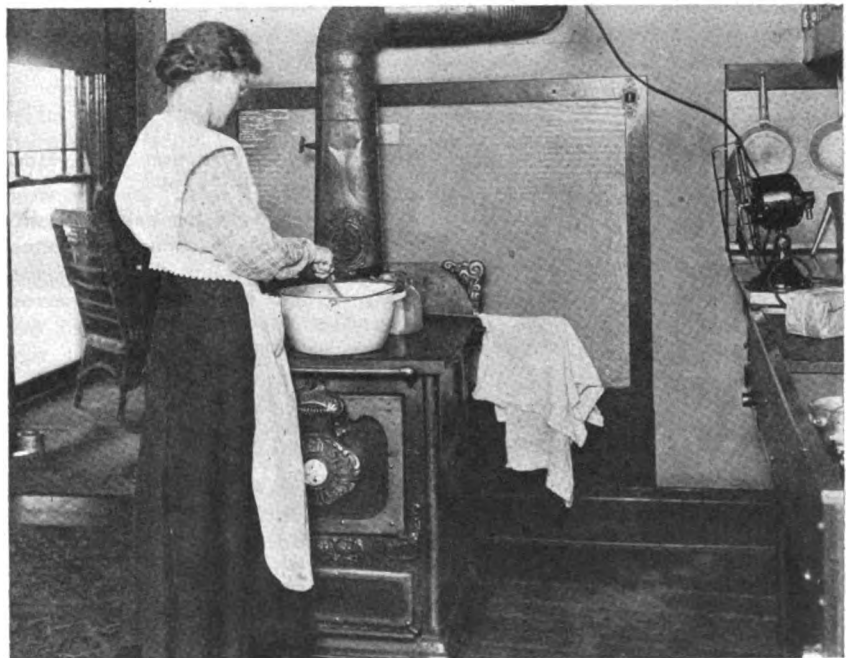
The most popular type of fan, perhaps,

is the desk fan. It is made in different sizes from six inches or so, on up to sixteen inches in diameter. It may be of the straight style, or the oscillating. The straight type stays in one position and whirls its breeze straight ahead. The oscillating sways slowly back and forth, describing an arc of more than 180 degrees, or a half circle, and spreading its breeze over a considerable area.

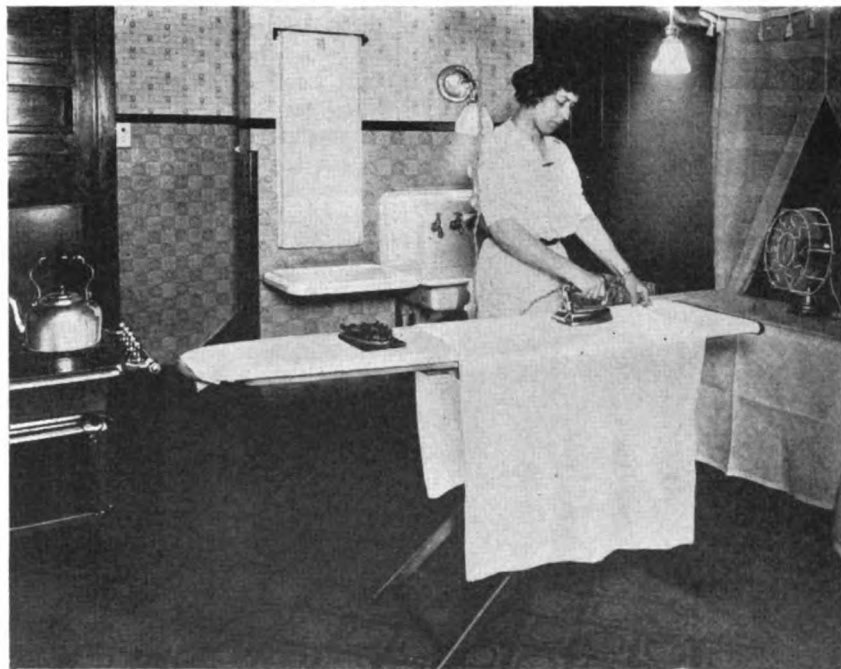
For large rooms and for permanent installations, there is the ceiling fan, which is made to whirl around from its place on the ceiling. They are popular for small shops and stores, but for the home, the most practical type is the portable desk fan, of a diameter and style to meet one's needs.

Paradoxical tho it may seem, the electric fan can be used to help warm the room in winter as well as to cool it in summer. You know the tendency of the air from a warm air furnace register is to rise straight to the ceiling. If the electric fan is placed behind the register and its blast of air is directed into the ascending current of warm air, this will be driven out into the room and the lower part of the room will be warmed more quickly than if the air is allowed to circulate in the regular way.

Other uses for the electric fan will present themselves, once it is placed in the home. The womenfolks will use it for drying the hair after a shampoo, at times when sun and wind are not available. The housewife may use it to hasten the drying of fruits, corn and the like, at times when the elements are not co-operating as fully as might be desired. We have seen an electric fan installed in the stable of a prize milk cow, to keep away the flies and cool



Working Over the Range in Summer Is a Less Uncomfortable Job When an Electric Fan Is in Operation.



An Electric Iron and an Electric Fan Are a Good Combination for the Housewife in Summer

the air, during the weeks when a world's milk record was being striven for. The owner declares that the fan contributed in no small measure to the final success of the endeavor.

All of which is but further testimony to the universal benefit which electricity brings to mankind if it just gets a chance. As we have remarked before in these columns, it is contributing more for the benefit of mankind today than any other single force in the world.



After the Circus

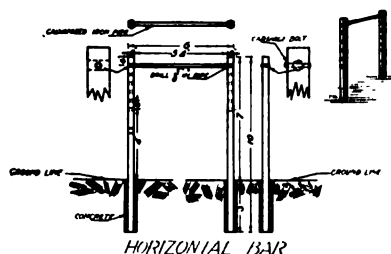
A PROPERLY constructed horizontal bar entails something of a bill if you get it from a dealer and pay to have it set up. Here are some plans and specifications for a horizontal bar which



Every Boy Likes to Show His Prowess on the Horizontal Bar.

any handy man about the yard can call into being and which any impecunious playground can afford, granted only that some enthusiast supplies the wits and the muscle to carry out directions. Here they are:

Provide yourself with a galvanized iron pipe 6 feet long and $1\frac{1}{4}$ inches thick. Also, provide two posts—of strong wood, naturally—and 10 feet tall by 4 inches square. At points 2 inches



Details of Construction of a Horizontal Bar.

from each end of the galvanized iron bar, drill holes $\frac{5}{8}$ of an inch across. Then, 6 inches below the top of each post, bore a hole $1\frac{1}{4}$ inches across. After that has been accomplished, bore a new hole intersecting this at right angles (the two holes must cross in the center without unevenness) and measuring $\frac{1}{2}$ inch in diameter.

It sounds elaborate, all this fuss about perfection in a thing as simple as a horizontal bar, and yet strength and security are the object, and any circus actor will tell you that, while he never distrusts his skill, he lives in constant terror lest something may go wrong with his apparatus. Better safe than sorry.

After making sure that the bar and

posts comply with the regulations, you dig two pits, 3 feet deep and about 10 inches square and far enough apart so that the space between posts will measure exactly 5 feet, 4 inches.

Into these pits you spill 6 inches of concrete, made by taking a shovelful of portland cement, two shovelfuls of sand, and four shovelfuls of gravel, and mixing with water. Then, you set the posts upright in the pits, careful to have them the stipulated 5 feet, 4 inches apart and to have the large holes near their tops exactly facing each other and—still more important, if anything—to have these large holes at exactly the same height from the level ground, as otherwise the bar will not be horizontal.

You are now ready to slip the bar thru the two large holes. As soon as it is in place, you secure it by poking carriage bolts thru the small holes in the posts. A carriage bolt $4\frac{1}{2}$ inches long and $\frac{1}{2}$ inch thick is the right size. And the bolts not only go thru the posts, but also, thanks to the holes you bored in it, thru the bar itself. Now you pour in the concrete to fill the space around the posts.

At this point it is advisable either to chloroform Sonny or to clap him in irons. Left at liberty, he will instantly begin turning himself around the bar like a demented cruller. Restrain him, and give the concrete two full days to harden.

The plans and specifications are not dictatorial. If you prefer to get along without concrete, and use bricks and stones at top and bottom of the pits to brace the posts, well, so be it; only, in that case you must tamp the ground down firmly around them.

After the posts and bar are securely set, you can improve on perfection by drilling additional holes in the posts, at intervals of 6 inches, to within 4 feet of the ground. That makes the bar adjustable to various heights, so that the small boys can perform on it and the big ones vault it.

Survey your handiwork. If any doubt remains as to its importance or your own, the doubt will soon enough be dispelled by Sonny's grin.—Community Service.

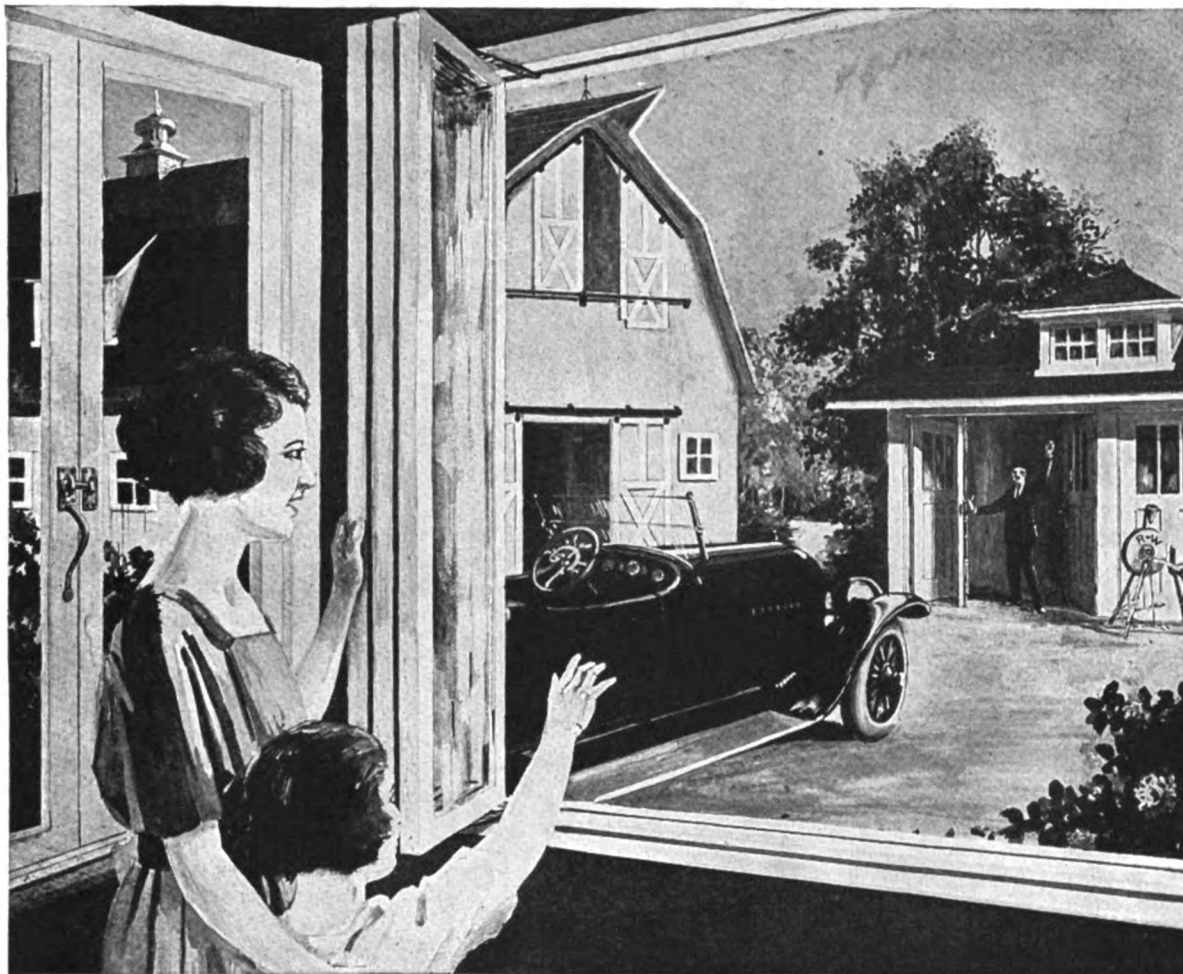


The Boys Like It

YOUR paper is all right and my boys like it too. I don't see how you could make FARM MECHANICS much better; just keep it like it has been.—H. D. K. THOMAS, Clinton, Ill.



FOLKS used to think that most any milk would do for the cheese factory. Now it's known that good quality cheese is only made from milk that is clean flavored and sweet.



The R-W Line

R-W Barn Door Hangers

Easy running, long wearing hangers for every type of barn door.

R-W Farm Grindstones

Ball-bearing, steel-frame grindstones made especially for farm use. There are many styles to choose from. Operated by hand or foot.

"Slidetite" Garage Hardware

The original sliding-folding garage door hardware. Suitable for openings up to 30 feet wide. Doors will never stick or sag. Always weather-tight.

Vanishing Door Hardware

House doors hung on this hardware slide instead of swing. They are great space savers and will never stick. Use them when you build or remodel.

Air-Way Window Hardware

Will make a sun room or sleeping porch of any room. The windows fold back out of the way—no interference with screens or draperies. Absolutely weathertight.

Sold by Hardware Dealers Everywhere

Hardware for the Farm and Home

The entire farm world recognizes the marked superiority of *Richards-Wilcox* hardware. It bears a nation-wide reputation for reliability. If you contemplate building or remodeling, by all means ask your local hardware or lumber dealer to supply you with *Richards-Wilcox* hardware.

We have just prepared an interesting little booklet called "Hardware for the Farm and Home." It tells how *Richards-Wilcox* hardware will lighten your labors and make your home a happier place in which to live. Send for your copy of this booklet today. It's free for the asking.

Richards-Wilcox Mfg. Co.
A Hanger for any Door that Slides.
AURORA, ILLINOIS, U.S.A.

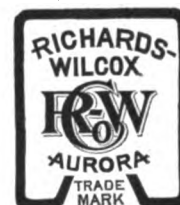
Minneapolis
Philadelphia

Chicago
Boston
Winnipeg

New York
St. Louis
LONDON, ONT

Cleveland
Indianapolis
CO. 1st
Montreal

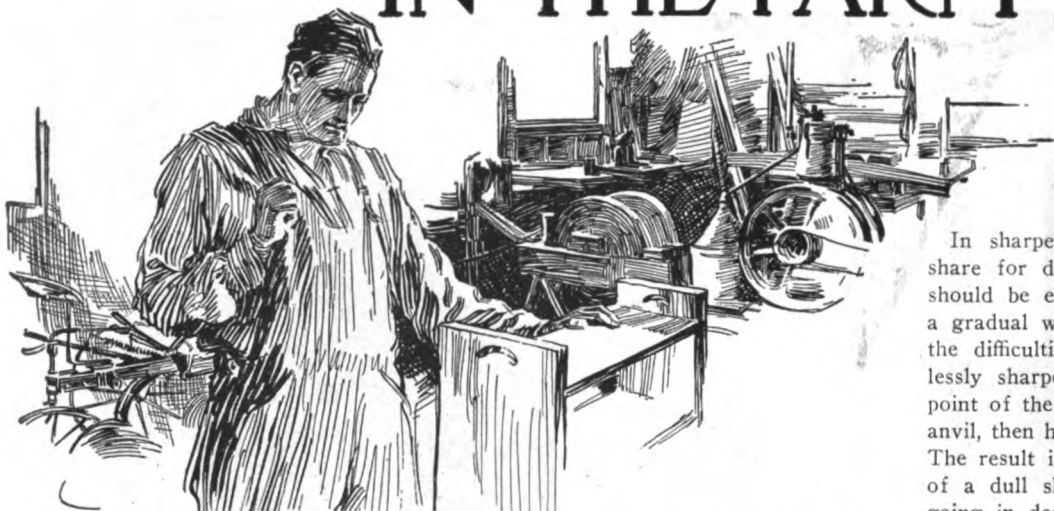
Los Angeles
San Francisco



Quality leaves its imprint

R-W hardware is in use on every one of the "Notable Farms" so far featured by Farm Mechanics.

IN THE FARM SHOP



Sharpening Shares

SHARPENING a plowshare is an art. This must be done correctly, as the share is one of the most important parts of the plow, and upon it depends largely the good work of the plow.

Care should be taken in doing this work not to dent the share when hammering, as this would spoil its scouring qualities.

There are three distinct kinds of shares, soft center steel, crucible steel and chilled metal.

These are divided in three different styles, common suck, deep suck and double suck.

Walking plows are regularly equipped



Only the Part of the Share to Be Pounded Out Should Be Heated.

with common suck shares. Wheel plows and tractor plows with deep suck.

Soft Center Shares

This share has a layer of low carbon steel between two layers of high carbon steel.

To sharpen a soft center share requires particular treatment. In heating, care should be taken that only the portion of the share which is to be pounded out is heated. This can be done by laying the share flat with the edge over the center of the fire and filling up the un-

derside with green coals. This keeps the greater part of the share cool, thus preserving its shape. The common mistake

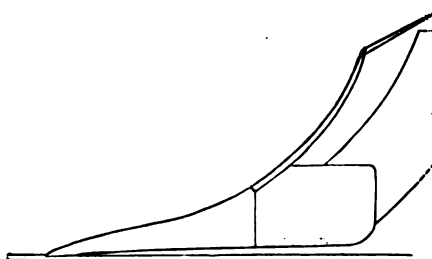


Pounding the Share on the Upper Surface Works the Hard Layer of Steel Down Over the Cutting Edge.

is to put the share in the fire in a vertical position with the edge down. This heats too much of the share and causes it to warp and spring out of shape.

The pounding should be done on the side on which the outer layer of hard steel is closest to the cutting edge. This may be on the top or underside. By this operation, the hard steel is worked over the center layer of soft steel, thus preserving for the share a hard cutting edge.

After the point has been hammered on the anvil to the proper shape, if necessary, a piece of steel can be welded to the top of the point.

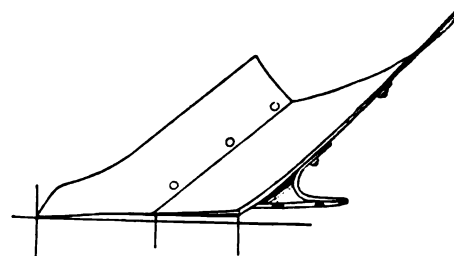


This Illustration Shows the Correct Angle and Shaping of the Point for Proper Suck.

In sharpening the point of a plow share for deep suck, the greatest care should be exercised to see that it has a gradual wedge-shaped slant. One of the difficulties encountered when carelessly sharpening shares is to put the point of the share over the edge of the anvil, then hit it a blow with a hammer. The result is worse than the equivalent of a dull share. Instead of the plow going in deeper as intended, it gouges along the ground and increases the draft of the plow. The illustration shows the proper angle and shaping of the point under general conditions. In some localities, when the ground is hard and dry, more of a slope is necessary to increase the deep suck.

The picture illustrates the proper land suck for a plowshare. The line parallel with the landside shows that the share begins to angle to the left and terminates at the point in the line parallel with the landside. This is the proper method for sharpening a share because it gives land suck which is just as necessary as deep suck for penetration.

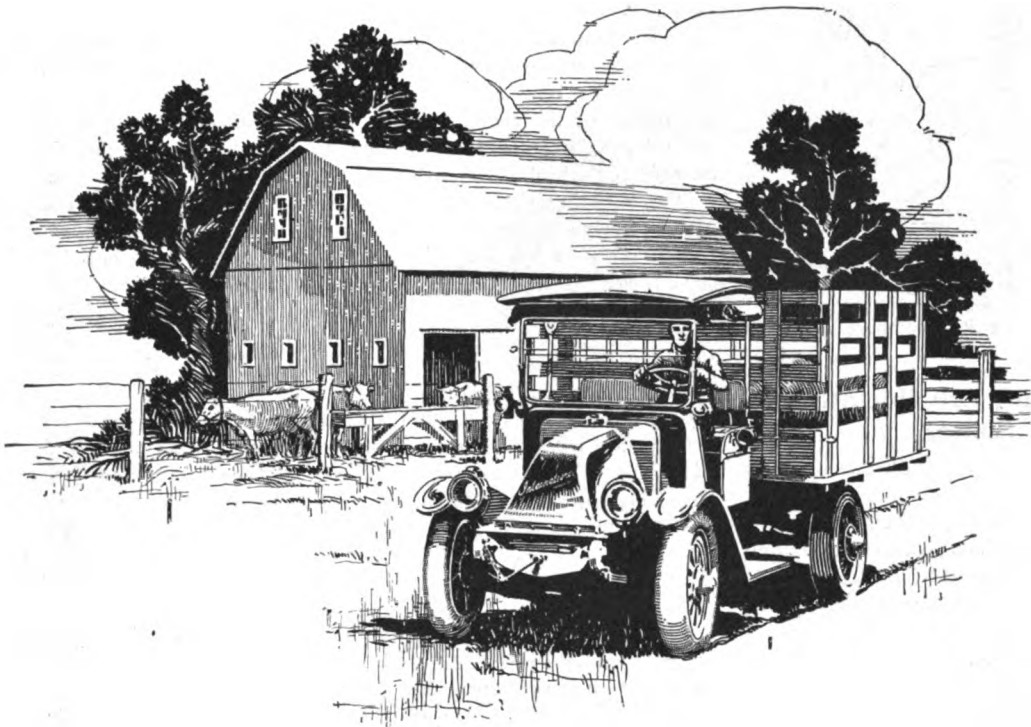
The wing of the share when properly sharpened rests on a straight edge with the point. The edge of the throat is



This Illustrates the Proper Land Suck for a Plowshare.

slightly raised from the straight edge. This means that when the plow is operating in the ground, the point is as much low as the throat is high on the straight edge.

To temper the share properly after it has been hammered out requires uniform heat. The right heat is a dull cherry red, a temperature of approximately 1,472 degrees. One of the most successful methods of tempering is to slowly draw the share thru the fire with the cutting edge down until the edge has been heated to the proper color. Then draw the share from the fire, put the point far enough into the ground to hold up



Haul the Modern Way—with International Motor Trucks

Thousands of farmers in America have invested in motor trucks because they have found that the use of horses for hauling is an extravagant waste. Time is too valuable to spend behind slow-plodding horses, and the owners of farm trucks have taken the surest way to increase their productive time. They have advanced a long way toward farm efficiency.

On the basis of the established reputation of International Motor Trucks for dependable, low-cost service in city and country hauling, we urge you to consider the present line of Internationals. Sizes range from 1500-lb. Speed Truck to the 10,000-lb. truck for heavy duty work. Special bodies can be furnished for hauling milk, stock, grain, feeds, vegetables, etc. Figure out the cost of your present hauling system. It is likely you can save many dollars with International equipment.

The Harvester Company has been working very long and intimately with farming and farm problems. Our products and reputation are based on 90 years' experience.

You can rely upon International Motor Trucks for your farm hauling. Information will be sent at your request.

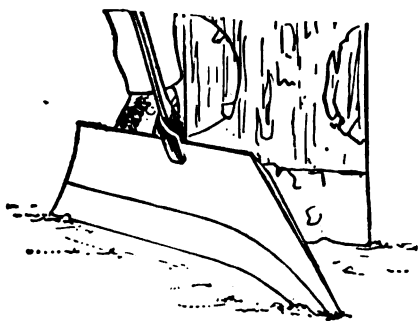
INTERNATIONAL HARVESTER COMPANY

CHICAGO

OF AMERICA
(INCORPORATED)

U S A

92 Branch Houses and 15,000 Dealers in the United States



The Right Way to Place a Plowshare for Cooling.

the share, and let it stay there until it cools.

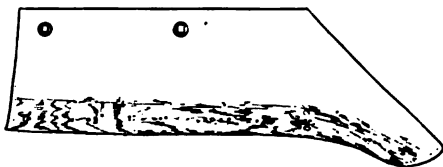
Sharpening Crucible Steel Shares

Crucible steel shares are made of one piece of steel. They cannot be tempered as hard as soft center steel because tempering makes them too brittle and thus subject to easy breakage.

Crucible steel shares can be sharpened exactly the same as soft center steel shares, or they can be treated according to the old custom of pounding the share on the reverse side.

Sharpening Chilled Shares

Chilled shares are made in molds. On account of the nature of the iron they cannot be heated and drawn out



When Hard Steel Covers the Entire Surface the Plow Should Be Pounded on the Upper Side.

by pounding as can steel shares. When it became necessary to sharpen chilled shares they must be ground on the upper side on an emery wheel or grindstone until a bevel edge appears.

Considerable information for giving a share the proper land and deep suck may be secured from the farmer who operates the plow. Keep in mind the following conditions:

If the plow bottom has a tendency to pull down on the point so as to bear heavily on the land wheel and lightly on the furrow wheels, the share is bent upward too much on the swing. To rem-



Hard Steel Is Worn Away, Exposing Soft Center. The Best Way to Do in a Case Like This Is to Make a New Share.

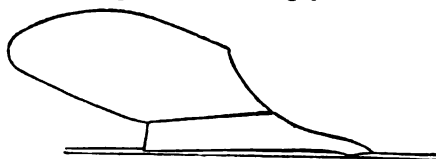
edy this, the wing of the share must be lowered.

If the plow has a tendency to bear down heavily on the furrow wheel and not on the land wheel, there is too much dip or suck in the wing of the share. This must be rectified by raising the cutting edge of the wing.

The length of time that the bearing and axles of wheel plows wear, providing they are kept properly greased, is largely determined by the correct adjustment of the plow bottom. For this reason, as well as that of good plowing, plowshares should be kept sharp and adjusted correctly.

These are delicate operations and a competent smith or plowman should be consulted if the operator is not absolutely certain which course to pursue.

The share of a walking plow has more wing than the riding plow. This



Straight Edge Shows the Correct Shape of Wing and Share for Proper Suck.

additional wing surface is necessary as a bearing to keep the plow running level. On sulky plows the wheels carry this weight. Hence when the shares of wheel plows are properly sharpened, only the cutting edge comes in contact with the ground. The effect of the wrong set on a share is immediately noticeable in a walking plow and is identical with that of the wheel plows. The operator has to stand the brunt of the incorrect adjustment that the wheels and frame of the wheel plow sustain.

When one remembers that the point of the share extends a slight distance landward from a line parallel with the landside to make it hold the land, and slightly downward below a line parallel with the bottom of the landside to hold it in the ground, and the wing of the share with edge shaped to keep the bottom working level, he will have little difficulty in setting a share on the plow bottom.

Shares and bottoms made by different manufacturers have differences in shapes, but the general principle is the same.



Watchful Spraying is Potato Panacea

POTATO growers who wish to prevent their spuds from rotting next fall are keeping watch of the plants and spraying all new growth carefully with bordeaux mixture, according to the specialists at the state college at Ithaca. Rains make this practice all the more

imperative, according to the experts, since the late blight, which causes rot, appears and spreads rapidly in damp weather.

Of course, successful growers realize that starting to spray in July cannot be depended upon to prevent blight; most of them made their first applications of bordeaux when they first began to spray for bugs, the poison and fungicide being applied together. But they are keeping careful watch over their potato fields to see that no new leaves are long left unprotected from the blight, spraying the vines often and thoroly, so that even if the weather is damp they will not be injured by the disease.

Great clouds of fine spray driven into the vines at high pressure have been found necessary for this late spraying; many growers use 100 to 125 gallons to the acre for their large vines. Machines which carry two nozzles to each row are used, and the nozzles are so adjusted that the fine mist is driven among the vines so forcefully as to cover them completely. Experience has shown that thoro and continued spraying of this sort is good insurance against the dreaded rot next fall.



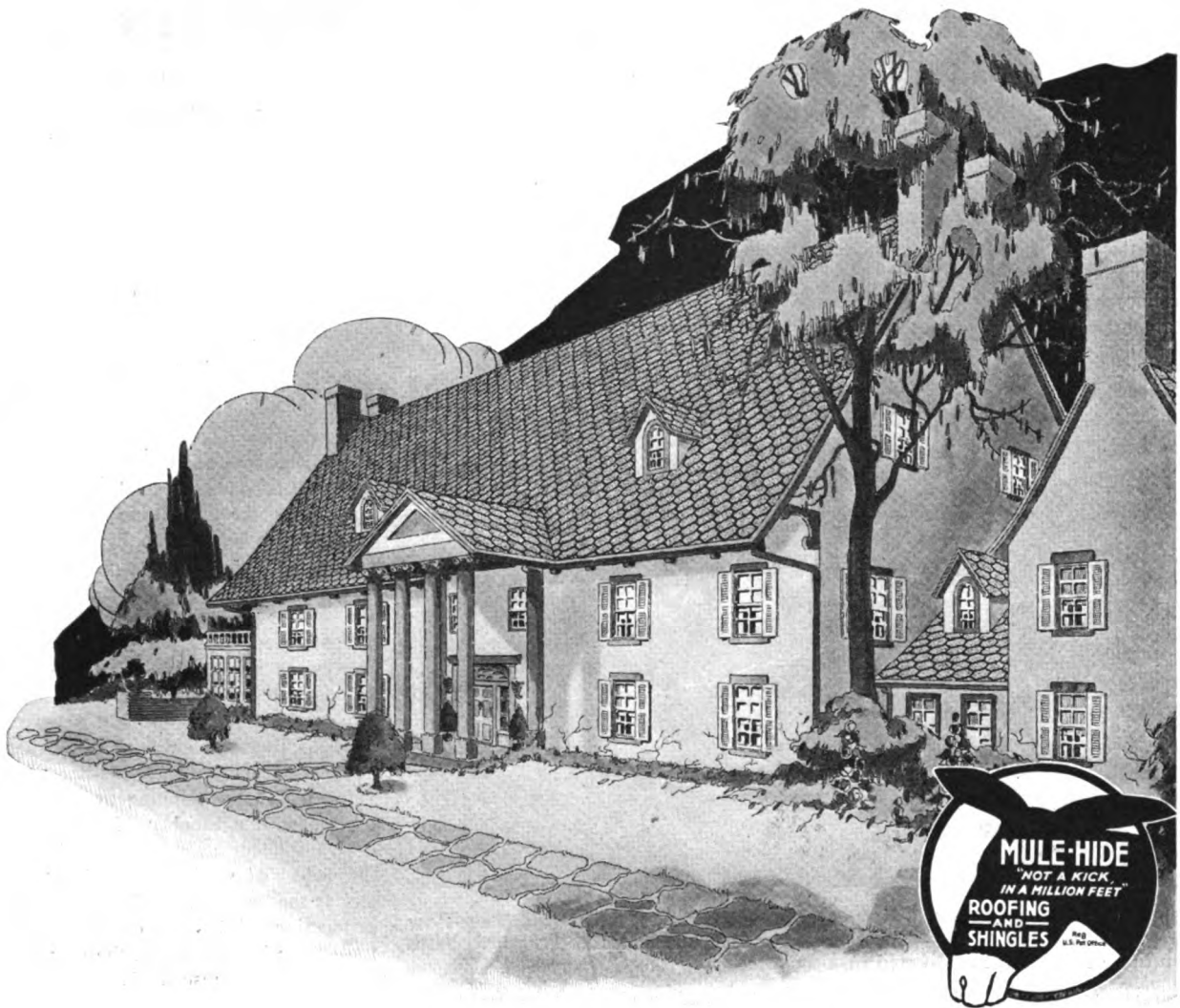
Yellowed Alfalfa Has Three Causes

THE yellow tinge and stunted growth which begins to appear in the alfalfa about the time of the second and third cuttings can usually be traced to one or more of three conditions, according to the crop men at the New York State Agricultural College. These are lack of lime, disease, and inoculation.

Lack of enough lime to counteract the acid in soil is given by the college as the most common cause of poor alfalfa in New York. Even some alfalfa fields to which lime has been applied before seeding produce one good crop and then if they do not contain enough lime to correct the soil acidity, the alfalfa turns yellow and dies out. A ton of limestone to the acre immediately after the crop is harvested is recommended by the college.

Another cause of poor alfalfa is leaf spot, a fungous disease which is not particularly serious and sometimes appears only once. Clipping and destroying the cuttings usually prevents the spread of this disease, but if it persists thru more than one crop the college recommends plowing alfalfa under and planting the land to a cultivated crop.

Sometimes alfalfa doesn't grow because the soil is not inoculated. The mere fact that scattered plants of alfalfa and sweet clover are seen growing on a field does not necessarily indicate that it will grow alfalfa well, especially if it has not been inoculated.



MONO-TYPE DESIGN ROLL ROOFING

Mono-Type **Roll** Roofing is the most modern and distinctive **roll** roofing on the market. In it is to be found that superior ability to wear well and last long that is characteristic of all Mule-Hide products.

—But, perhaps, as important to the user is the unique and attractive design. From no other **roll** roofing can you get the attractive shingle effect to be found in the tile—like Mono-Type Design.

Moreover, it can be laid quicker because the Mono-Type design permits application either horizontally or vertically.

There is practically no waste with Mule-Hide Mono-Type, because less cutting is required to match the pattern.

Finally, its cost is the lowest per year for any roofing in its class.

It is made in two colors: Red and Green.

A progressive dealer in nearly every community is handling Mule-Hide products. However, if there is no one near you to show a sample of this roofing, write to us and we will send you a sample and the name of a dealer who will take care of your wants.

THE LEHON COMPANY OF CHICAGO

Office and Factory

44th to 45th Street on Oakley Ave.

Using Up Old Implements

Farmers Use Ingenious Methods to Wear Ont Machines Designed for Horses, Before They Purchase Those Specially Designed for the Tractor

By E. R. WIGGINS

IT IS always best to use specially designed tractor implements with tractors, but this is not always practicable. In this period of transition from the use of horses and mules to that of mechanical power, the farmer must thoughtfully consider whether it is best, when he buys a tractor, to discard his

cultivating corn. Feeling he could not afford to lay aside a two-row horse-drawn cultivator practically new, and buy a special tractor cultivator, he drove both into town where a local blacksmith made a simple hitch connecting them. The tongue was removed, and in its place was bolted a short angle iron

turnbuckle the owner was able to adjust the cultivator so that it would line up and properly follow the tractor. Another advantage with this hitch was that the outfit could be successfully backed.

This combination of tractor and cultivator took two men to operate, one man to run the tractor, the other to ride the cultivator and watch the corn. But in this way each man gave his undivided attention to the job assigned him. This was a special advantage in cultivating the first time thru, as the work was done very rapidly. These men cultivated 25 acres a day, with ease, which is very fast work considering that the corn was very small and weedy. The farmer explained that altho two men were needed, the work was done so much better and faster than by the two working separately with horses that it paid. Indeed, he was so pleased with using the tractor to pull his horse cultivator that he is planning to employ the tractor with a number of other horse-drawn implements. Thus, he increases the field of usefulness of his tractor, and at the same time reduces the cost of production of his crops. When these tools have become worn, the new implements will be those made especially for tractor use.



Water Causes Fire in Mows and Stacks

FIRE in hay mows and stacks usually breaks out where hay has been stored wet with rain and dew, according to the New York State Agricultural College. Investigations show that hay can be stored safely when cured enough so that a wisp of it twisted tightly does not show juice coming to the surface and when there is no rain or dew on it.

The college reports that it has found no advantage in the use of salt in stacks or mows to reduce the fire danger. Legumes like clover and alfalfa offer greater fire danger than grasses.

Fermentation is the cause of spontaneous combustion. If the hay is wet it ferments and forms carbon and water. The water thus formed causes bacterial action and heating until, if oxygen is present, flames may break out.



Tip-Top Magazine

FARM MECHANICS suits me tip-top—C. C. Ellis, Manville, Wyo.



Cultivating Corn, First Time Thru, with a Tractor Hitched to a Two-Row Cultivator Designed for Use with Horses, but Adapted to the Tractor. With this outfit 25 acres were cultivated in a day.

horse-drawn tools, or to adapt them to the tractor. There are many farmers who have implements in good condition which, with a little ingenuity, can be used for power farming—an economic necessity, until such time as he will be in position to fully equip his farm with a line of tractor tools.

This summer a farmer near Milan, Ill., decided to use his Fordson for cul-

drawbar with a clevis at its front end to attach directly to the tractor. From a point back of the clevis to a position on the cultivator frame, a rod provided with a turnbuckle was placed. The cultivator was arranged back of the tractor so that the left gangs lined up with the center line of the tractor, thus allowing the right row gangs to come to the right of the tractor. By turning the



Two-Row Cultivator Designed for the Tractor Requires One Man Less to Operate than a Cultivator That Was Made for Horses.



Chart of Recommendations

Name of Car	Motor Oil	Name of Car	Motor Oil
Ace.....	M. H.	Locomobile.....	M. L.
Allen.....	M. H.	Lorier.....	M. H.
Ambassador.....	H.	Maibohm.....	M. H.
American Six.....	M. H.	Marion Handley—	
Anderson.....	M. L.	(Cont. Motor).....	M. H.
Apperson Road pl.....	H.	(Knight Motor).....	H.
Auburn.....	M. L.	Marmon 34.....	H.
Austin H. King.....	M. H.	Martin Wasp.....	H.
Bay State.....	M. L.	Maxwell.....	M. L.
Beggs.....	M. L.	Mercer.....	H.
Biddle.....	M. L.	McFarlan Six.....	M. H.
Birch.....	M. H.	Mitchell.....	M. H.
Bradley.....	M. L.	Moline Knight.....	H.
Brewster.....	M. L.	Monitor.....	M. L.
Briscoe.....	M. H.	Monroe.....	H.
Brook.....	M. H.	Moon.....	M. L.
Buick.....	M. H.	Moore.....	M. L.
Bush.....	M. H.	Nash.....	M. H.
Cadillac.....	M. H.	National.....	M. H.
Case.....	M. L.	Nelson.....	M. H.
Chalmers.....	M. H.	Nelson & Le Moon.....	M. H.
Chandler.....	M. H.	Northway.....	M. H.
Chevrolet.....	M. L.	Oakland.....	M. H.
Classic.....	M. H.	Oldsmobile 6.....	M. H.
Cleveland.....	M. H.	Oldsmobile 8.....	M. H.
Cole 8.....	M. H.	Olympian.....	M. H.
Colonial.....	M. H.	Overland.....	M. L.
Columbia.....	M. H.	Owen Magnetic.....	M. H.
Comet.....	M. L.	Packard.....	M. H.
Commonwealth.....	M. L.	Paige.....	M. H.
Crawford.....	M. L.	Pan-American.....	M. H.
Crow-Elkhart.....	M. H.	Parenti.....	M. H.
Cunningham.....	M. H.	Patterson.....	M. H.
Daniels.....	M. H.	Peerless.....	M. H.
Davis.....	M. L.	Piedmont.....	M. L.
Dispatch.....	M. L.	Pierce-Arrow.....	M. H.
Dixie Flyer.....	M. H.	Pilot.....	M. H.
Dodge.....	M. H.	Premier.....	H.
Dorris.....	M. H.	Preston.....	M. H.
Dort.....	M. L.	Regal.....	M. L.
Durant.....	M. H.	Reo.....	M. H.
Dusenbergs.....	H.	Revere.....	H.
Earl.....	M. H.	Richlieu.....	H.
Economy.....	M. L.	Rickenbacker.....	M. H.
Elcar.....	M. L.	Roamer—	
Elgin.....	M. H.	(Cont. Motor).....	M. H.
Essex.....	M. H.	(Dusenbergs Motor).....	H.
Ferris.....	M. L.	Rolls Royce.....	M. H.
F. I. A. T.....	H.	R. & V. Knight.....	H.
Ford.....	M. L.	Saxon.....	M. H.
Fox.....	H.	Sayers.....	M. L.
Franklin.....	M. H.	Scripps Booth.....	M. H.
Gardner.....	M. L.	Sheridan.....	M. H.
Glide.....	M. H.	Simplex.....	H.
Grant.....	M. H.	Singer.....	H.
Gray.....	M. H.	Spacke.....	E. H.
Hackett.....	M. H.	Sperling.....	M. H.
Hal Twelve.....	M. H.	Standard.....	M. H.
Halladay.....	M. H.	Stanwood.....	M. L.
Handley-Knight.....	H.	Stearns Knight.....	H.
Hanson.....	M. H.	Stephens Six.....	M. H.
Harroun.....	M. H.	Stevens.....	M. H.
Hatfield.....	M. H.	Stevens Duryea.....	M. H.
Haynes.....	M. H.	Sterling Knight.....	H.
Haynes 75.....	M. H.	Studebaker.....	M. L.
H. C. S.....	M. H.	Stutz.....	H.
Holmes.....	H.	Sun.....	H.
Hudson.....	M. H.	Templar.....	H.
Huffman.....	M. L.	Vello.....	M. H.
Hupmobile.....	M. H.	Westcott.....	M. L.
Jackson.....	M. H.	White.....	M. H.
Jacquet.....	H.	Wills St. Claire.....	H.
Jordan.....	M. L.	Willys-Knight.....	H.
Kelsey.....	M. L.	Winther.....	M. H.
King.....	H.	Winton Six.....	M. H.
Kissel Kar.....	M. H.		
Kline Kar.....	M. L.		
Lafayette.....	M. H.		
Leach.....	M. L.		
Lexington.....	M. H.		
Lincoln.....	M. H.		
Liberty.....	M. L.		

How Your Choice Means Loss or Gain

THE life of your automobile engine depends to an extraordinary extent upon your choice of a lubricating oil. Upon how you choose depends whether you lose or gain:

power

economy (in repairs and operation)

saving in fuel

If you needed expert legal advice, and at the same price could choose between the most famous jurist in the United States and an untrained, untried advocate, which would you take? Identical reasoning applies to the choice of a lubricating oil for your car. Hundreds of untested lubricants beg for your attention. For the same or less money you may have the knowledge, experience, and expert attention of the staff of lubricating engineers of the Standard Oil Company (Indiana).

Use Polarine

THE PERFECT MOTOR OIL

Made In Four Grades Seals Pistons Against Loss of Power

The grade indicated in the chart to the left as correct for your car has been created especially to meet the working temperature of the bearing surfaces of your particular engine. It has been evolved with reference to the clearance between those particular surfaces to the speed at which the bearing surfaces move, and to the weight of the moving body.

The Standard Oil Company (Indiana) leads the world in its research into the vitally important question of petroleum lubrication. Correct lubrication means life—vastly increased life to all machinery. A great laboratory for improved lubrication is one of the important contributions of the Standard Oil Company (Indiana) to this industrial era in which we live.

Standard Oil Co., 910 So. Michigan Ave., Chicago
(Indiana) 2665

N. B. For recommendation of grades to use in tractors, consult chart in any Standard Oil Co. (Indiana) station



The "Tourmore," a Comfortable Home Mounted on a Truck Chassis That Was Designed and Built by a Michigan Man for a Tour Thru the Western Scenic Parks. It contains all home conveniences, even to a bathtub.

Sets the Brakes and is "Home"

Michigan Man Designs Special Body, Mounted on Truck Chassis, for Touring, That Has All the Comforts of a Modern Home, Even to a Bath and Running Water

THE "Tour-More," shown in the illustrations, is an unique automobile developed and built under the direction of C. F. Rouze, of Pontiac, Mich., and incorporates both the speed and comfort of closed car driving and at the same time it has all the conveniences of a modern cottage home.

Mr. Rouze designed the body with the purpose of touring with his wife from Detroit to Yellowstone Park and Kansas City. It is mounted on a bus chassis and is equipped with every conceivable comfort for touring. The driver sits inside the body at the left of the car and the machine is controlled by center gear shifts and the usual touring car arrangement of clutch, brake and wheel

controls. Directly back of him, on either side of the car, are two long rows of seats which with chairs scattered about the interior will take care of fourteen people.

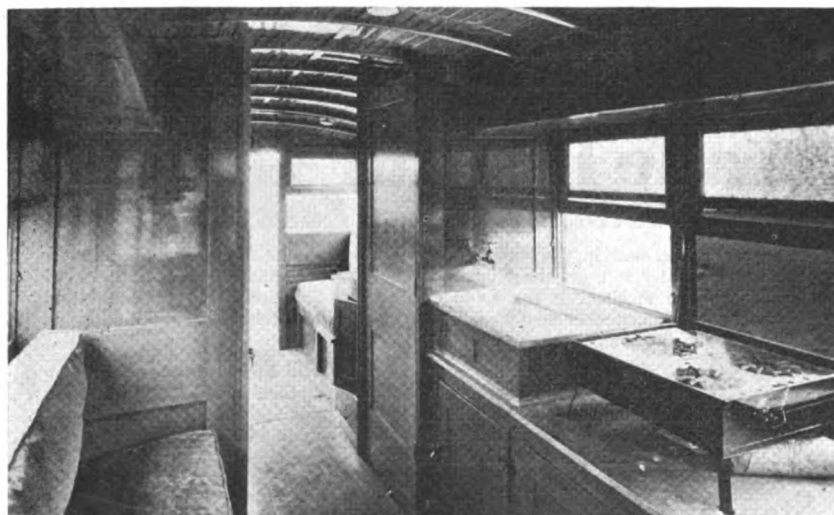
At night these seats unfold and there are beds for four. An arrangement of kitchen utensils which would delight the eye of any woman have been accomplished and a good sized stove is carried together with a refrigerator and ample room has been provided for cooking. Another unique feature of the equipment is a complete toilet with a bath tub and running water under pressure.

Inside the body proper there is a writing desk, easy chairs, a clothes closet and along the side of the left running

board a box has been built to carry equipment. The entire body has been screened in to do away with dirt and flies while camping.



THE wise potato grower these mid-summer days will be careful not to dig too far ahead of pickers. Exposure to the hot sun for two or three hours in the middle of the day is likely to result in sun-pricking, especially if the potatoes are not fully mature. A great deal of the rot in early shipments is directly due to sun-pricking.



Interior View of the "Tourmore," Showing the Electric Range for Cooking.



Wide Divans Are Built Into the Sides of the Car. They become beds at night. The bathtub, supplied with running water, is shown sunk into the floor, which covers the tub when the latter is not in use.

HART-PARR "30"

3-PLOW TRACTOR

Cut to \$895



Comparison will prove that the Hart-Parr "30", at \$895, is the cheapest farm power in the world. The tractor we offer at this unparalleled low price is the same identical Hart-Parr "30" that has so consistently won the foremost of the country's fuel economy and power tests. The Hart-Parr "30" sells today at a price so low that every farmer can afford to own one.

Priced Far Below the Farm Product Price Level

Even before the war, when farm products were considerably lower in price, a tractor like the Hart-Parr "30" of today cost you far more than our new price. For instance, figured in bushels of wheat—it would have taken approximately 1423 bushels in 1913 as against 625 bushels today to place a tractor equal to the Hart-Parr "30" on your farm. It figures out in the same proportion with other farm products, such as corn, hogs, cattle, cotton, rice, etc.



Many of the old Hart-Parrs that plowed the virgin prairies of the Northwest are still in use today. The great grand-daddy of all Tractors was old Hart-Parr No. 1, built in 1901.

The new price is down to "rock-bottom." It represents an unbeatable value. Hundreds of farmers have ordered their Hart-Parr tractors in the last few weeks. You want your Hart-Parr for fall work. Guard against delayed delivery by ordering now. With the price of raw materials increasing, we can give no guarantee that this low price will be continued indefinitely. Write today for our latest catalogue and name of nearest dealer.

HART-PARR COMPANY

Founders of the Tractor Industry

561 Lawler Street

Charles City, Iowa



Champion Girl Canning Teams Going to Europe

A FREE trip to Europe, girls! And with all expenses paid. This is the grand prize that has just been announced, the largest ever offered, as open to the canning club girls of the United States.

The American Committee for Devastated France is providing the three months' prize trip. The three leaders who will train the winning teams will accompany the party.

The plan, as announced, provides for the usual local, county and state elimination contests conducted by the State Agricultural College Extension Departments in their own way. After that there will be five interstate or sectional contests held at the following convenient expositions:

Eastern States Exposition, Springfield, Mass.
Southeastern States Exposition, Atlanta, Ga.
Interstate Fair and Exposition, Sioux City, Ia.
Colorado State Fair, Pueblo, Colo.
Pacific International Livestock Exposition, Portland, Ore.

The two winning teams at each sectional contest will compete for final national honors during the week of the International Livestock Exposition at Chicago, December 2-9. At this contest, the honors and prize trips will be awarded on the basis of efficiency in demonstrating canning; in judging canned products, and by the home canning record. Fifty-five thousand rural girls who are members of the girls canning clubs, conducted by the Agricultural Colleges and the U. S. Department of Agriculture, are expected to compete in the contest. These girls, it is estimated, will can \$675,000



A Team of Iowa Girls Demonstrating How They Put Up the Good Things for the Family.

worth of fruits and vegetables this year.

The unit will leave the United States about June 1, 1923, and will spend three months in Europe. Eight weeks of the time will be spent in visiting interesting places in France and in demonstrating canning in the devastated regions under the supervision of the French Department of Agriculture and the American Committee for Devastated France. Several other countries of Europe will be visited, the itinerary of which will be announced later.

The purpose of the contest, according to the regulations, is to encourage thrift in conservation of all available products

during the season of abundance; to emphasize, thru canning, the importance of a well rounded diet that will make for farm and rural home efficiency; to stimulate a greater interest in canning clubs, and to determine prize winners worthy of a trip to Europe and capable of demonstrating canning to the French people.

A committee of State Leaders and members of the States Relations Service of the U. S. Department of Agriculture have been collaborating with the National Committee on Boys' and Girls' Club Work in preparing the rules and regulations of the contest so that they will be satisfactory to every state in the Union.

In addition, the Hazel-Atlas Glass Company of Wheeling W. Va., thru the efforts of Mrs. Bernice Carter Davis, Educational Director, is supporting the contest whole-heartedly by furnishing cash prizes and supplying, free of charge, the canning goods for judging and the empty jars for the canning demonstration work at the final contest. Mrs. Davis, who was formerly with the American Committee for Devastated France and who has spent considerable time in France in connection with this work, was instrumental in securing the prize trip.

The following state leaders are acting as chairmen of each sectional contest in their respective districts:

Miss Louise P. Dowdle, assistant state agent, Georgia, Atlanta, Ga., section.

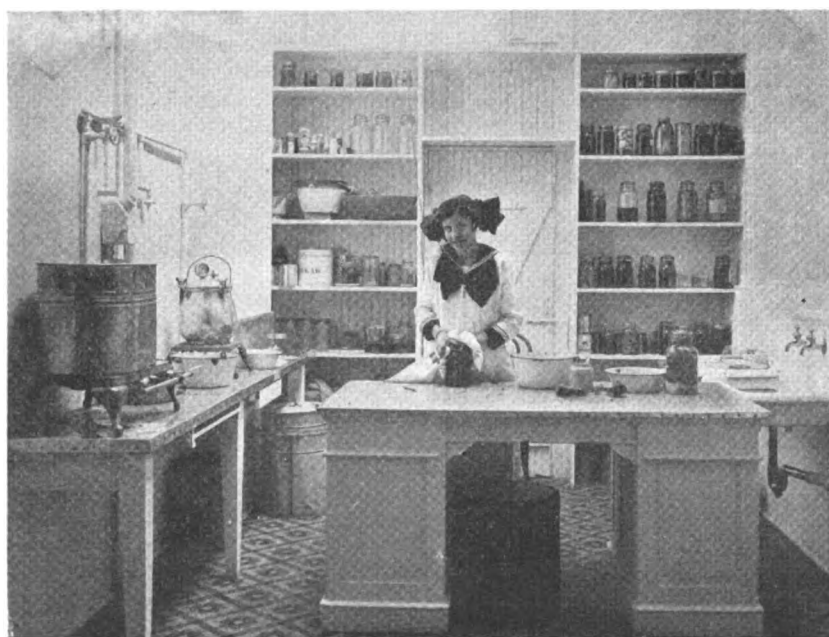
Miss Elsie Trabue, assistant state leader, Connecticut, Springfield, Mass., section.

Miss Maude Sheridan, state club leader, Colorado, Pueblo, Colo., section.

Miss Helen Cowgill, assistant state leader, Oregon, Portland, Ore., section.

Miss Josephine Arnquist, assistant state leader, Iowa, Sioux City, Ia., section.

The women leaders from the ten states having the winning teams will comprise the committee in charge at Chicago.



A Canning Club Girl at Home Preparing Her Exhibits. Incidentally she is adding to the family supply of food for next winter.

Here's Road Planing For You!

**An Ounce of Performance
Beats a Ton of Promise, and
the Pictures Here Show
PERFORMANCE!**

Here's a Wehr Road Maintainer shown in action on a road at Billings, Mo. It was bought by the Billings Special Road District and you can see for yourself the transformation it is making in the road.

The pictures tell the story better than any words. Here you see the sterling worth of the WEHR in RESULTS—in WORK DONE! Judge a road maintainer by *Performance*, and not promise, and you settle, decisively, on the WEHR!

WEHR Road Maintainer

Attached to Fordson makes a perfect one-man road maintainer for patrol or city street work. Quickly attached or detached, allowing the tractor to be used for other work. Cutting blade can be raised or lowered from the tractor seat.

More Evidence of Wehr Efficiency

*From Owners of Moose Jaw Race Track,
Moose Jaw, Ark.*

"With reference to work done on the Moose Jaw race track on May 23rd by your Fordson Tractor and Wehr Road Maintainer, we wish to state that we are thoroughly convinced that for this kind of work, it is entirely satisfactory and far superior to anything we have ever seen. Our track was in a deplorable condition, and we thought it was impossible to get it in shape again for racing purposes, having been neglected so long after the last rain. The surface was baked hard and very rutty; after one half hour's application of your machine, we were very pleasantly surprised to find the track in exactly as good condition as we desired. The ruts were planed down and smoothed over, leaving a cushion of from two to three inches on the surface, which is so necessary to horse racing. Our next work out on the following morning made us realize more than ever, the real value of your outfit as all horses without exception showed a great deal more speed.

"Thanking you for your good work, and assuring you of our confidence in the Fordson Tractor and Wehr Road Maintainer, we remain,

(Signed) J. W. RUZASKA JOHN DYE
THOS. LITTLE J. N. MCLEAN

*From Aldermen of Washington Park
East St. Louis, Ill.*

"We, the undersigned Aldermen of Washington Park, East St. Louis, Illinois, witnessed a demonstration made under the supervision of the Hill Motor & Tractor Co., this afternoon, May 8th, on Kingshighway and Hill Avenue, with a Wehr Grader-Planer attached to the Fordson Tractor, and under the conditions, must say that we were very much surprised with the work done. There were bumps of gumbo, as high as two feet and as hard as rocks, thrown out of ruts, and ruts two feet deep and two feet wide, and this little wonder, as we term it, leveled the bumps and filled up these places to our utter surprise. The outfit did as much work in three hours, as five teams of horses could do in a day, and summing up the cost, it amounted to almost nothing."

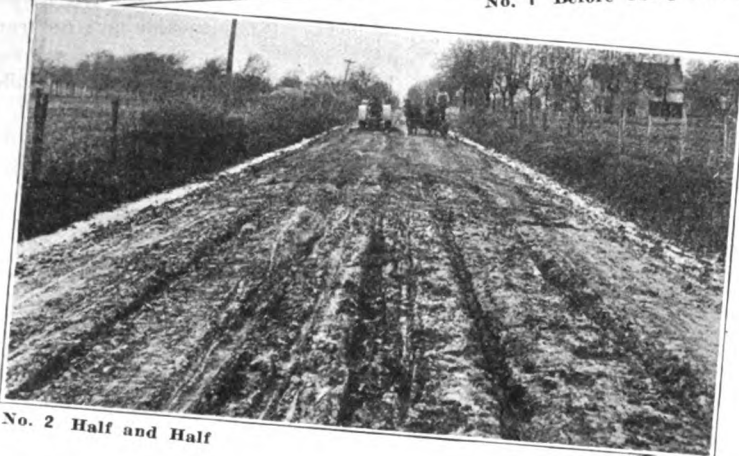
(Signed) P. J. DONAHUE L. P. WRIGHT
C. E. COOK WM. D. CRAIG
F. W. ADAMS R. H. GARDNER
H. S. DALLON

*Let us send you full description of the Wehr
Road Maintainer and tell you how you can
get demonstration without cost or obligation*

WEHR COMPANY
563 Thirtieth St.
Milwaukee Wisconsin



No. 1 Before Using Planer



No. 2 Half and Half

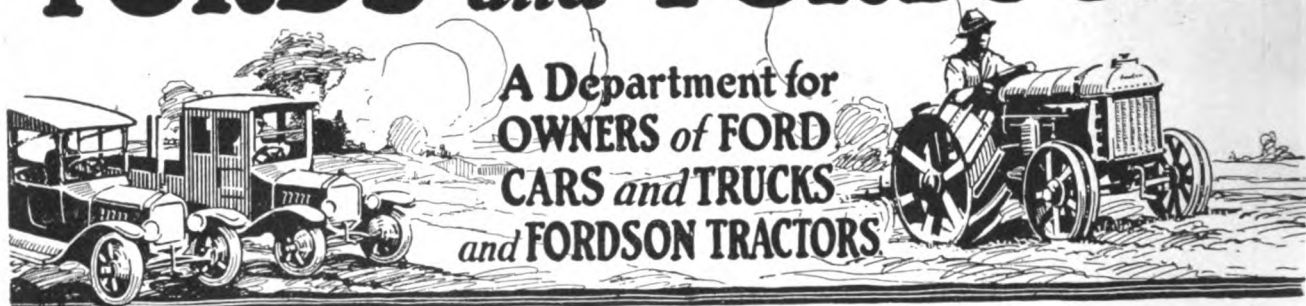


No. 3 Third Round



No. 4 Finished

FORDS *and* FORDSONS



MOTOR TROUBLE ADVICE FOR FORD OWNERS

By F. M. Service

Fordson on Case Separator

To the Expert:

I am a reader of *FARM MECHANICS* for a long time and I always like to see it come.

I would like to find out if a Fordson tractor will pull a 21 by 36-in. Case separator in threshing. I have never threshed with a Fordson and I have people tell me that it won't pull it. Still I have read where it will. I also would like to know what size pulley it takes for this Case separator as I have a regular Fordson pulley.—HARRY SITT-AUER, Sykeston, N. D.

Answer—A Fordson is designed to operate a 20x36-in. thresher and the slightly increased size of your Case 21x36 in. should not be enough to hold down its operation. Use a 9½-in. pulley on the separator and if there appears to be a lack of power, cut the pulley size to 8 inches.—F. M. SERVICE.



Plows for Fordson

To the Expert:

Would you kindly inform me if the Fordson tractor will pull the Oliver

plow 14-inch two-bottom No. 132 successfully in stiff land, and how it compares with the Oliver No. 7?—NEWTON B. COLLINSON, South River, Mo.

Answer—Of the two Oliver plows you mention we would recommend the No. 7 which is a two-bottom 14-inch plow and was designed by the manufacturer for use exclusively behind the Fordson Tractor. No difficulty should be experienced using this plow in stiff land.—F. M. SERVICE.



Fordson Overheats

To the Expert:

As I am a subscriber to *FARM MECHANICS*, I wish to ask you for a little information. This tractor has been out one year and I have had trouble with it heating ever since I had it. It makes no difference how good a mechanical condition you put the motor in, it will warp and burn the valves in four or five days' use. It has had good care all the time I had it. If there is any information you could give me to help overcome this trouble I would be glad to get it.—ALBERT F. MEYER, Loami, Ill.

Answer—Unless you are operating your tractor at very high speeds, under a big pull, you should have no trouble with the cooling system, and we would suggest that you check over the following things for your trouble.

First, be sure your fan belt is tight. Be sure the spark is not in too retarded a position. Remove the radiator and take off the upper and lower iron tanks. Then clean out each tube in the core with a thin wire and strip of waste; also flush out the water jacket in the cylinder head and cylinder block castings. In other words, be sure you have a good circulation of water and air, and you should have no overheating troubles. F. M. SERVICE.



Give it More Gas

To the Expert:

I have a nearly new Fordson tractor that will misfire and stop unless the choke is regulated to a certain position.

I can find nothing wrong with the spark plugs, coils, carburetor or wiring.

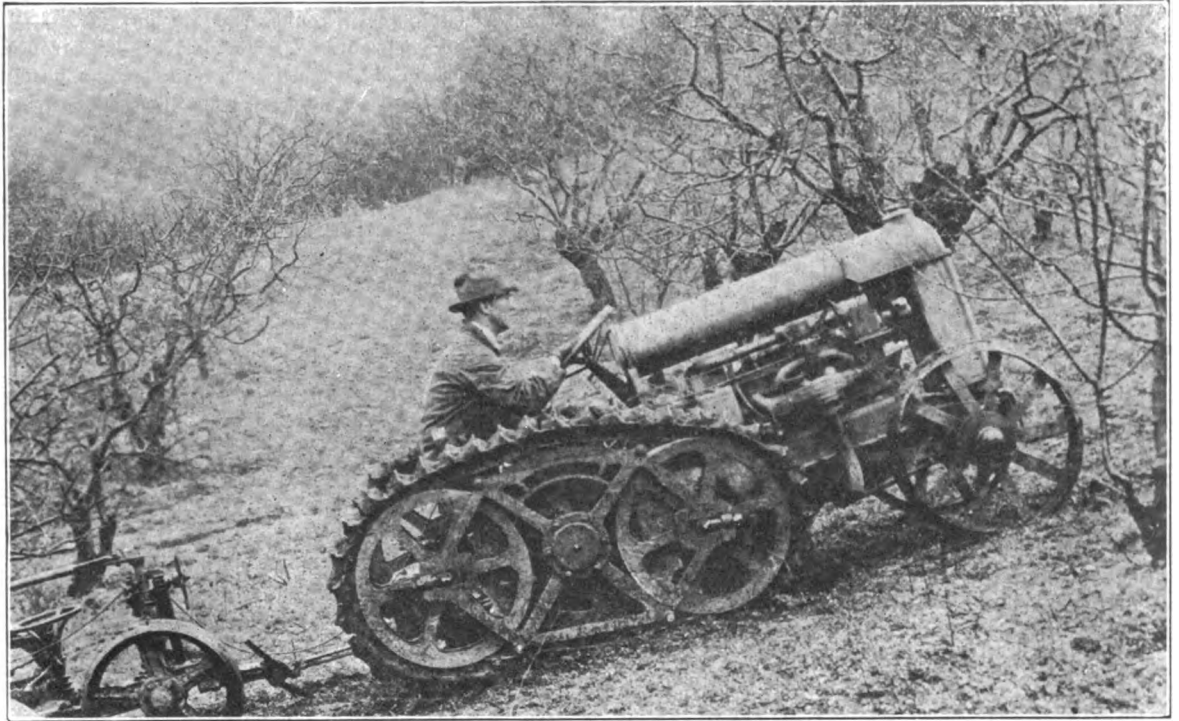
I would appreciate it if you would advise me where I might find this trouble.—JESSE B. DUNCAN, Gansevoort, N. Y.

Answer—Your trouble is a too lean mixture and is not in the ignition system. It is probably due to dirt clogging the



A COMPLETELY "FORDIZED" FARM. J. T. Neese, a farmer living near Greensboro, N. C., purchased a complete line of Ford automotive equipment for use on his farm. He has a tractor for field work, a truck for hauling and a Ford touring car for the use of himself and his family. The McGlamery Auto Co., of Greensboro, which supplied the outfit, says that many farmers in that vicinity are following Mr. Neese's example. Incidentally the McGlamery company has had great success in placing tractors on the farms in that vicinity and leads the 301 Ford dealers in the North Carolina territory in tractor sales.

Get the most out of your Fordson.



IN AN HOUR YOU CAN FIT RIGID RAIL TRACKS

to your Fordson and make its performance twice as great.

Put the sturdy—stubborn—Rigid Rail Tracks on and

MAKE A CRAWLER OF YOUR FORDSON

The lowest priced Crawler on the market.

DOUBLE THE DRAWBAR PULL

You do more work with the same amount of fuel.

ELIMINATE SLIPPAGE

Same speed as the wheel machine, but

LOWER AND NARROWER AND MORE POWERFUL

For orchard and vineyard.

WORK ON SOFT OR SANDY GROUND

Fine for rice fields.

WILL OUTWEAR YOUR TRACTOR

With Hyatt Bearings and Alemite cups.

TURN SHORTER UNDER A LOAD

A hand brake for each track.

EASY TO ATTACH

Anyone can do it in an hour.

THE HADFIELD-PENFIELD STEEL CO.

BUCYRUS, OHIO

Read What Owners Say Of the Wonderful

Phelps

Power and Light

"Phelps is simple to operate, dependable, economical"—ARCHIE HILES, Dunkirk, Ind.

"100% efficient and more simple than others"—MOORE BROS., Jackson Center, Pa.

"Put your prospects in touch with us"—GLENWOOD MINERAL SPRINGS, Chillirothe, Ohio.

"We wouldn't get along without it"—HENRY HOFF, R 4, Saginaw, Mich.

"Only 2c a day for Phelps complete service"—RALPH WHEATON, Alma Center, Wisc.

"I cut my light and power bills from \$75.00 to \$8.00 per month with the Phelps"—LEO KRAMER, Hillsboro, Ill.

"Simple, easy to handle"—J. O. LARSON, Leonardville, Kans.

"Best plant made"—JOHN F. S. ZAIS, West-ernport, Md.

"Owned a Phelps 3 years and have never been without light a single night"—J. L. NOVAK, Allen, Nebr.

"Phelps is the ideal plant"—F. W. ROBBINS, Attica, N. Y.

WRITE FOR 2 FREE BOOKS

Learn how much happiness, comfort and rest Phelps brings to farm homes. Mail the coupon today whether you are thinking of buying a light plant right now or not.

To Dealers—Phelps dealers are successful. We help you find prospects and close sales. Get all facts. Write

Phelps Light & Power Co.
614 First St.

Rock Island Illinois

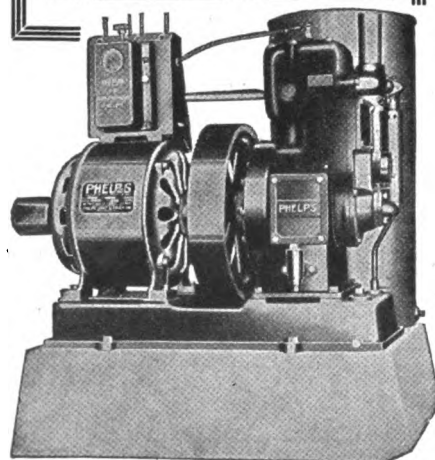
Phelps Light & Power Co.
614 First St. Rock Island, Ill.

☐ Send me your 2 free books
☐ Send me your dealer franchise facts.

Name _____

Address _____

Town _____ State _____



WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

spraying nozzle. The spraying nozzle can be taken out and cleaned by removing the plug which screws into the float chamber just under the nozzle.—F. M. SERVICE.



Knock in Fordson

TO THE EXPERT:

I have been a constant reader of FARM MECHANICS and have watched your answers to troubles. As yet I have not seen one like mine, so thought I would write to see if you could help me.

The tractor is a Fordson 1919 model which is giving me trouble of pounding and knocking.

I first took up the main bearings and did away with the pound. I then took up the connecting rods for the knock, but didn't get it. I then put in new pistons, wrist pins and rings but that hasn't helped.

The knock seems to be in the head end of it tho I have been over the cam shaft and time gears.

If you can help me in this I will be very much pleased.—ANDREW P. MELCHER, Sharon, Mass.

Answer—If you have taken up the connecting rods, and replaced the pistons and wrist pins, there are only two places left that would cause the knock you are complaining of. A loose flywheel or loose clutch studs, and this can be determined by inspecting the nuts on the inner side of the flange on the crankshaft where the flywheel is fastened. If these are not loose, the trouble is in the upper half of the crankshaft main bearings and no doubt the babbit is burned out or loosened up in the cylinder block. If this is the case, the motor had best be removed and the main bearings rebabbited. Any large Ford agency can do this work at a very nominal expense.—F. M. SERVICE.



Trouble With Spark Plugs

TO THE EXPERT:

I am having considerable trouble with spark plugs on my Fordson. It seems that I can't get the trouble corrected here, therefore I appeal to you for aid.

The spark plug points on two cylinders next to the dash will burn to a sharp point then break off in twelve hours run. This applies to wire that goes thru porcelain. The one that is attached to a shell is not so readily affected but this also burns up. The heat is so intense that it melts the glaze on porcelain next to points. The coil units have been changed and adjusted; also the spark plugs by a Ford service station man, but this don't eliminate the trouble one bit. The two plugs next to radiator are affected the same way

but not nearly so much. The tractor was bought about three months ago and has been run about two weeks all told. It has never given any trouble whatever except burning up the points of the spark plugs. There are other Fordsons here. None seem to give the trouble mine does. It seems the trouble is getting worse.

Can you tell me what the trouble is and how to correct it?—C. A. TOWNSEND, Kilmichael, Miss.

Answer—The trouble you are having with the points burning away on your spark plugs, is caused by the current of your magneto being extra strong and this certainly is a good fault, as it increases the power of the tractor considerably. We would suggest that you purchase spark plugs of the type which have extra heavy electrodes and are built to stand a heavy current.—F. M. SERVICE.



Knock In Ford Truck Engine

TO THE EXPERT:

I have a Ford truck, the motor of which has a distinct knock at all speeds, while the engine is running with medium load. It is not heard either idle or under heavier load. I just had this motor overhauled to remove this knock. They say they tightened the bearings and put in new oversize pistons. Can you tell me what is the probable cause? Cylinder block cast 7-11-18.

I have also a Huber tractor, the cylinders of which I had rebored last winter. The man who did the work claims he did a good job on it, but ever since it was rebored it has pumped oil excessively, not enough to foul the spark plugs, but enough to keep the smoke rolling. I have used as high as four gallons of oil in a day. Can you explain this?—CHAS. W. JAKES, Lafayette, Ind.

Answer—There are several different things that will cause a knock to be heard in the way that you describe the one in your motor. Loose pistons or wrist pins. It is possible for you to have a piston slap even if they did put in oversize pistons, as they evidently did not rebore the cylinders. If you have driven very much since the car was purchased in 1918, the cylinders are pretty sure to be egg-shaped and the oversize pistons may not have been able to take up the wear. This can best be told by removing the cylinder head and with a pair of feelers measure the distance between the cylinder wall and piston on all sides. If the pistons fit correctly the .003 feeler should fit loosely and the .004 inch feeler should be tight.

One of the wrist pins may be knocking, due to being fitted too loosely. This can best be told by shorting out each cylinder at a time as you are driving along. To do this simply hold down the vibrator coil spring with your fingers which will shut off the ignition on that cylinder and when you find a cylinder that when your short it the knock disappears, that is the wrist pin or piston that is loose.

The main bearings may be loose. This can also be located by cutting out the ignition with the coil units. If the front main bearing is loose, the knock will disappear when No. 1 and No. 2 cylinders are cut out. If the center main bearing is loose, cutting out No. 2 and No. 3 will stop it. A main bearing knock is distinguished from a piston slap or loose wrist pin by being more dull, while a piston or pin produces a sharp rap.

Occasionally a loose cam shaft bearing will knock in the way you describe. Any cam shaft noise can be told by the fact that it is heard with every revolution of the motor, instead of every other one, as in the case of crankshaft bearings and piston.

The excessive smoking of your Huber tractor is caused by either the pistons or piston rings not being fitted properly and sealing the pistons in the cylinders. The only remedy is to remove them and carefully inspect the fit. Be sure that the pistons bear all around their circumference and that there is not more than .004 play any place between the walls of the cylinder and pistons. Also be sure the piston rings are bearing all around. The surface that they do bear on can be told by the shiny appearance.—F. M. SERVICE.



Fordson Uses Too Much Oil

TO THE EXPERT:

I have a Fordson tractor and it works perfectly well only it uses about 2½ gallons of motor oil in 11 hours run. I do not think the crankcase is leaking. I would think that it would pass up the pistons but the spark plugs do not get dirty. I use heavy motor oil. Would you please tell me where the trouble is? —FRANK P. KARGES, Haubstadt, Ind.

Answer—The excessive amount of oil your tractor is consuming is probably due to the grade of oil you are using, and we would suggest that you try out the best grade of tractor oil you can obtain and believe better results will be had. You must remember that a tractor motor operates at a heat far in excess of an automobile engine, and the crankcase oil is at a much higher temperature.

HOW MANY SOILS ARE IN A FURROW?



IN no field are soil conditions constant. The pull of the tractor varies many times in every furrow due to changing soils. One furrow may have clover sod, clay, sand, gumbo, loam—all of which require a different pull from the tractor. It is the business of the STANDARD GOVERNOR to smooth out such difficulties.

The STANDARD GOVERNOR will cut repair costs, decrease fuel costs, prolong the life of the Ford Truck or Fordson Tractor, and pay for itself many times over by increased efficiency in field and road work. The STANDARD GOVERNOR has many points of mechanical superiority. Because of its all 'round high quality, it cannot be sold for a price as low as the prices set on inferior makes. It does everything that a good governor is supposed to do and it performs those duties efficiently, economically and lastingly. It is very easily installed.

The automotive dealer who is not selling his share of *Standard Governors* is passing up an opportunity in his territory. *The Standard Governor* is a fast selling device that gives the dealer a quick turnover and gives the truck or tractor owner lasting satisfaction. Write us today for prices and further information.

KOKOMO BRASS WORKS, Kokomo, Indiana

New York, 245 W. 55th St.
Chicago, 1430 Michigan Ave.

BRANCHES:

San Francisco, 32 Van Ness Ave.

Detroit, 4610 Woodward Ave.
Boston, 15 Jersey St.

STANDARD GOVERNOR

"Don't Park Here"

or in fact anywhere unless your Ford is equipped with a Security Auto Lock. It's the only safe lock.

A turn of the key—pull up the wheel and take out the key. Security Auto Lock has the approval of Underwriters' Laboratories. Absolutely Thief Proof.



Security Lock, Steering Wheel with Aluminum Spider and 17-inch Corrugated Walnut Rim—



Security Cap Lock

FORD DEALERS Security Auto Lock

is the big seller for Fords. The proposition is a good one. Write to us about it. Lock sent on approval.

SECURITY AUTO LOCK CO.

410 North Paulina Street

CHICAGO, ILLINOIS

Approved by Underwriters' Laboratories
The Original Loose Wheel Lock for Fords

Our Implement Inspector



HE finds much new and worth-while farm equipment offered to increase efficiency and cut down labor.

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Tractor Stop Plow Hitch

THE tractor stop plow hitch shown in the illustration, is so designed that it practically combines the tractor and plow with itself into one harmonious implement. This comes about thru the

ers make their machines earn them good incomes during the season when there is no work required on the farm.

Shown in the illustration is a saw rig that attaches to the front of the Fordson tractor, so that it is not necessary to stake down or line up the tractor when work of this character is done. The saw rig can be quickly attached or detached from the tractor, and as it is held rigidly in place the most efficient operation from the belt pulley is secured. The frame of the saw is made of heavy angle iron, and has self-aligning bearings. It runs saws of any size up to 30 inches at a speed of from 850 to 1,200 revolutions per minute.

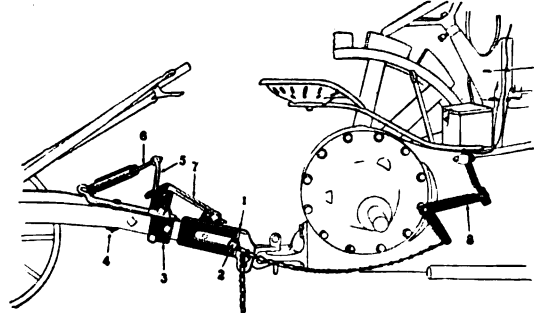
With this saw rig the owners of Fordson tractors have an outfit that will prove profitable this winter. The saw rig weighs only 300 pounds and can be detached and hauled from one job to another by the tractor.



Spotlight Operated from Inside of Car

REACHING out around the wind shield or thru the curtains to turn the spotlight so that its rays will strike where the light is wanted is no longer necessary. Shown in the illustration is a new spotlight that is operated from inside the car. A turn of the handle will direct the light to the right or left, up or down, as wanted.

The light is high-class from the point of manufacture and material used. The



Tractor Stop Plow Hitch Takes the Jolt Out of Hitting Obstructions.

fact that the plow hitch is so attached that the plow does not become detached from the tractor at any time. A portion of the hitch, number seven on the cut, uncouples when the plow strikes dangerous obstructions, and immediately stops the tractor.

The main body of the hitch, number one on the cut, however, remains in position on the beam so that when the plow has been disengaged from the obstruction all that is necessary to resume operation is to back the tractor up, sliding the members of the hitch back into place until they re-lock. The simplicity of this hitch may be seen by a glance at the illustration. It is made of steel and is practically indestructible. The tractor stop plow hitch is adaptable for use on Fordsons, Titans, Samsons and others.

It is a great advantage, too, in discing, harrowing, cultivating and dragging.



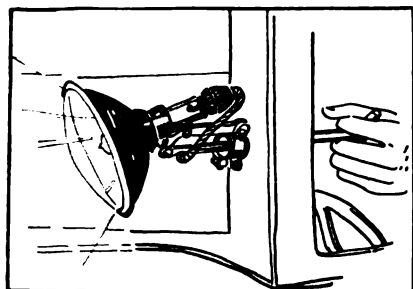
Portable Saw Rig for Fordson Tractor

CUSTOM wood sawing is a job to which the tractor is well adapted for winter work, and many tractor own-



Saw Rig Attached to Front of Fordson and Driven by Belt Pulley.

reflector is coated with pure silver, while the lens is strong. All parts are of full nickel on brass, which prevents rusting. The shell is enameled black. The light is easily installed on a car, either open



Spotlight Adjustable from Inside the Car.

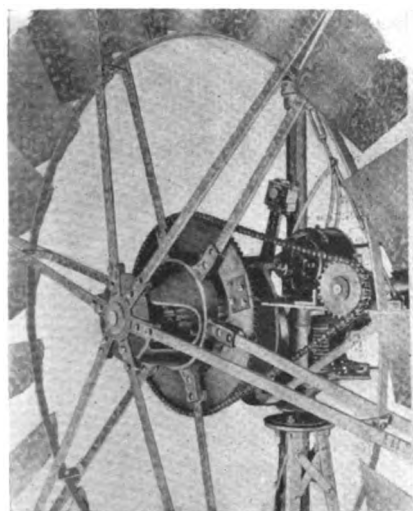
or closed, and once in place can be easily adjusted. Its powerful illumination may be turned like a pencil of light to search for bad places in the road, as its control always is at the hand of the driver.



Wind-driven Electric Light Plant

USING windmills to generate electricity to be stored in batteries for use as needed is a satisfactory method, according to those who have had such plants in operation during the last few years. Shown in the illustration is a view of the farm of Henry Anderson, Haxtun, Colo. Mr. Anderson says "Our 12-foot mill would supply two families with electricity if we had two sets of batteries."

The motive power for the generator is supplied by a windmill, nearly all the standard makes being available providing they have a surplus of power over the pumping requirements. The attachment to the windmill is made along the



Electricity Generating Plant on Windmill.



YOUR THRESHING—AND GOODYEAR BELTS



Goodyear Klingtite Belt in threshing service on the farm of Jalmer Herre, Halstad, Minnesota

At the height of his threshing, Jalmer Herre, of Halstad, Minnesota, took time last season to tell many of his neighbors how much better his new Goodyear Klingtite Belt was performing than any belt he had ever had in twenty years of farming.

"There isn't a sign of slippage," he said. "No matter how heavy the straw, the belt delivers the full engine power, and there is no jamming of the feeder. Where I used to have daily troubles with ordinary belts—slippage, jamming, resetting and overheating—the job is pushed through now at top speed."

The Goodyear Klingtite Belt holds the pulleys in a clinging, free-running grip, carries full power and favors the engine bearings. It works the same in all weather. It does not shrink, is subject to a minimum of stretch, requires no belt dressing, and needs no breaking in.

These belts are made in endless type for heavy duty and in suitable lengths for the lighter drives.

Goodyear Dealers everywhere, and many progressive hardware merchants besides, sell Goodyear Klingtite Belts. For further information, write to Goodyear, Akron, Ohio, or Los Angeles, California.

Goodyear Means Good Wear

GOOD YEAR
KLINGTITE BELTS

Copyright 1922, by The Goodyear Tire & Rubber Co., Inc.

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS



Tractor Efficiency

To get the most WORK out of your tractor you've got to have piston rings that won't leak.

No-Leak-O Piston Rings won't leak because they're sealed with oil.

The patented "oilSEALing" groove—found only in No-Leak-O—packs an oil film in between your piston and cylinder walls like "packing" in a pump.

This oil "packing" seals in *all* the expanding gas. Every drop *must* work.

The same "film" prevents oil from working up into your cylinder heads to form carbon and keeps "unburnt" gas and kerosene from seeping down into the crank case to weaken lubrication. No-Leak-O gives perfect oil control and compression in each individual ring.

Jobbers and Dealers: Write to-day for literature and liberal dealer proposition. Let us tell you how our National Advertising helps bring you business.

Owners: Write for interesting booklet, "The Piston Ring Problem and Its Solutions."

NO-LEAK-O PISTON RING CO.

Dept. F-2

BALTIMORE, MD.

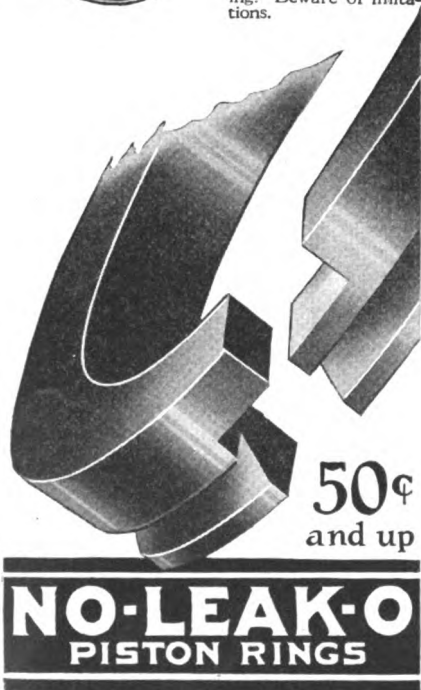
One price during eight years of continued success

One design—for all cars—50¢ and up



READ THIS SIGN

Remember it—Look for it. It marks a Garage or Supply Store that is "live" and dependable. Even if your Garage Man doesn't display it, tell him you must have No-Leak-O Piston Rings for your next overhauling. Beware of imitations.



Farm of Henry Anderson, Haxtun, Colo., Showing Windmill That Provides Electricity for Light and Power.

wheel shaft box. The plate which carries the generator and counter shaft is bolted to the shaft box, using the same bolt holes as required for the main bearing cap casting. The generator is driven by a sprocket and chain system thru the counter shaft from the wind wheel. A large sprocket wheel is bolted to the hub of the wind wheel and by the use of the proper number of spacing washers this sprocket can be placed in proper alignment with the counter shaft sprocket.

The generator is a three-fourths kilowatt and generates from zero to 25 amperes proportional to the wind velocity and is designed to prevent excessive overloads in high winds. The entire generator is weather-proofed and protected by a metal cover. The wires from the generator pass thru the mast pipe of the mill to the automatic switchboard, which is fastened to the wall near the battery. The battery is a 16-cell, having 15 heavy plates in each cell.

The plant operates in the following manner: The wind wheel rotates and thru the sproket and chain system causes the generator to rotate 48 times to each turn of the wind wheel. The electricity produced by the generator is carried on two copper wires to the collector ring and then to the switchboard.

The automatic battery cutout on the switchboard operates to make or break the circuit between the generator and

the battery. This circuit is automatically closed when the voltage of the generator is higher than the battery and broken when the voltage of the battery exceeds the voltage of the generator. This operation takes place until the battery is fully charged.

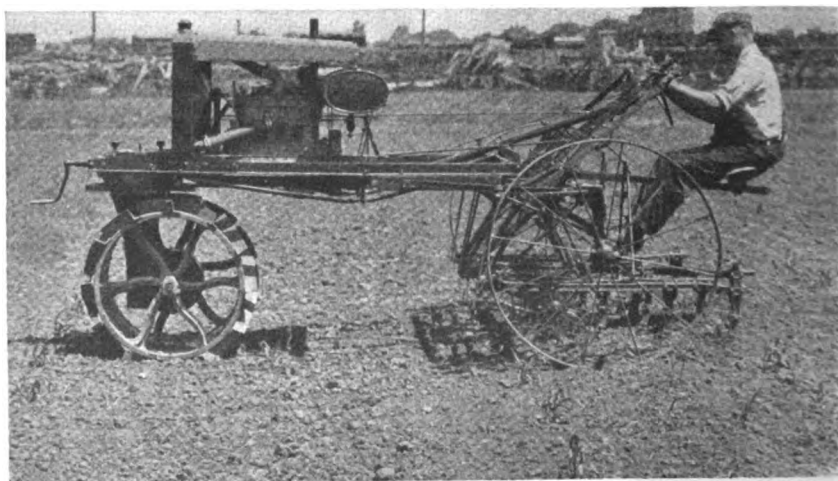
The capacity of this plant is sufficient for 15 50-watt lights, or double that number of 25-watt lights and for operating small motors, an electric iron and vacuum sweeper.



New Cultivating Tractor

A NEW two-wheel tractor unit, to which may be attached the implements now on the farm is shown at work with a cultivator in the accompanying illustration. In some cases, such as the cultivator, the attachment can be made direct to the angle iron frame. In other cases a truck is attached to the rear of the tractor and implement connections made by means of a drawbar. It is claimed that the tractor furnishes enough power to operate a two-row cultivator, mower, binder, or any load that can be drawn by three horses, such as a one-bottom plow.

The frame of the tractor is of angle iron on which is mounted a four-cylinder engine. The wheels are 30 inches in diameter, with eight-inch faces. Aside from the general features of the design such



Tractor Unit to Which the Farm Implements Are Attached.

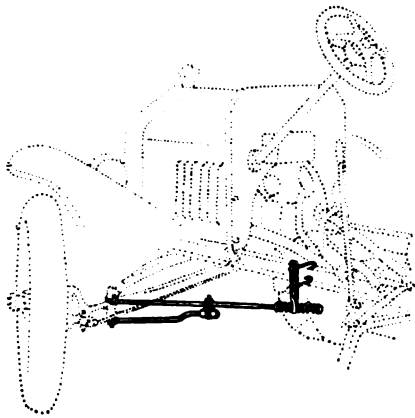
as two wheels so placed that they will run between two rows of corn, the use of implements now on the farm and the simplicity of design, the most interesting is the transmission. This consists of a bevel gear with a ratio of nearly three to one, and in the worm gear 20 to 1, giving a reduction from the engine to the axle of nearly 60 to 1.

Variation in the rate of speed is obtained by a manually operated throttle control of the engine. The rated speeds are from $\frac{1}{4}$ to 4 miles per hour. To obtain this variation with the reduction used it is necessary to vary the engine speed from 175 to 2700 revolutions per minute. Provision is being made to attach a belt pulley to the engine crankshaft at the front of the machine.



Adjustable Radius Rods for Fords

RADIUS rods that hold the front axle of a Ford car or truck more rigid and make driving more comfortable are now available. They are shown, in-



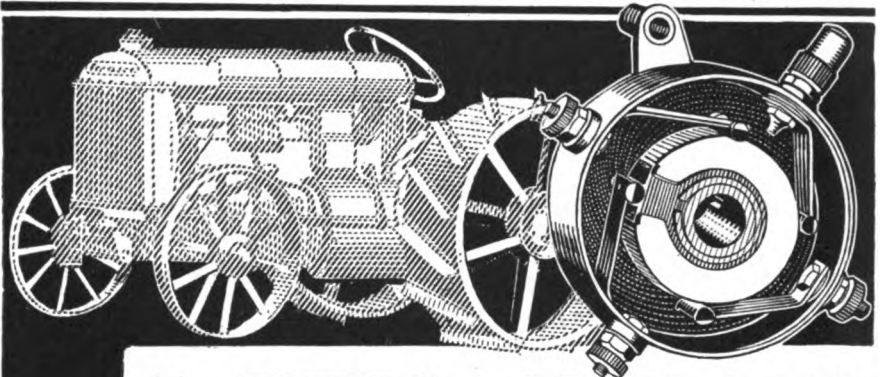
Ford Chassis with Radius Rods Attached.

stalled on a Ford chassis in the accompanying illustration. The rods are securely fastened to the frame on each side of the car and anchored firmly to the front axle above and below. This strong construction takes the strain off the crank case and assures perfect alignment of the front wheels and axle. They provide rigidity to withstand severe thrust and at the same time flexibility and resiliency are attained by the strong springs held in place by adjustable nuts.

With these rods correctly installed the car holds the road like a big car and the front wheels may be turned sharply when speeding without fear of accident. Tests on a smooth road have shown that the car will hold a straight course for a block or more without touching the steering wheel when these rods are used.

Aside from greater ease in driving, it is claimed for these radius rods that

U & J Ford Timers



For FORDS and FORDSONS

In the Field or on the Road, every U & J Timer is guaranteed to outwear five ordinary timers and give a red-hot spark every mile of its life.

Only an exceptional timer can stand up to tractor work. The U & J Rotor Timer will positively stand up under this service season after season. Different from our regular timer only by Oiler Terminal being moved from No. 1 to No. 3.

\$
250

Guaranteed to Outwear Five Ordinary Timers

By the Rotor principle, it gives a wipe contact of steel on steel that insures the hottest possible spark. Its simplicity and efficiency make the U & J Timer complaint-proof and trouble-proof. Sold on 15 Day Trial—Money Back Guarantee by dealers everywhere. Write for illustrated literature and terms.

U & J CARBURETOR CO.

2853 South Halsted Street, Chicago

Pacific Branch—SAN FRANCISCO

The U & J Accelerator with its Adjustable Footrest and Guide is the only practical foot-throttle applicable to all Ford Motors

GRID-IRON GRIPS

The tractor wheel that lays its own track.

Grid-Iron Grips are unequalled for use in any kind of boggy or otherwise uncertain ground.

With Grid-Iron Grips You Can

Do all your plowing in the fall because you are able to go through wet soil where standard wheels will dig in.

Pull loaded trailers over mud roads almost hub deep.

Pull a large set of discs over soft plowed ground.

Pull an eight foot scraper or grader in road building.

Plow two more acres in a ten-hour day.

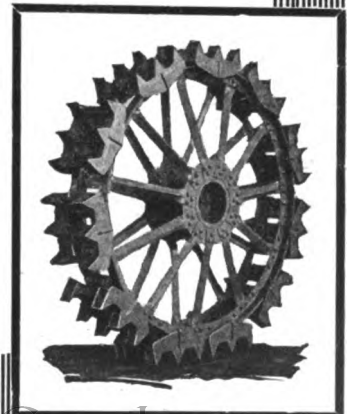
Save five gallons of kerosene in a ten-hour day.

Get at least 35 per cent more draw bar pull.

We can furnish complete new wheels with Grips for Fordson or Sampson Tractors, also Grips for any other wheel type tractor.

Let us send you our latest prices.

Grid-Iron Grip Wheel Co.
TOLEDO, OHIO





Try My Shaler!

No tool-kit is complete without a Shaler 5-Minute Vulcanizer. It is a necessity and the greatest convenience ever offered to the motorist.

Why take chances with cold patches when you can make a heat-vulcanized repair that will "stick"—even outlast the tube—in five minutes?

The Shaler 5-Minute Vulcanizer is easy to use—you need only a match. Always ready—never bothered by wind or storm. Cannot injure or burn the tube. No gasoline—no danger of fire.

Get a Shaler 5-Minute Vulcanizer from your dealer. It will soon pay for itself by the saving in time, trouble and tire repair bills.

Complete Outfit \$1.50

*Slightly Higher in Canada
and West of the Rockies*

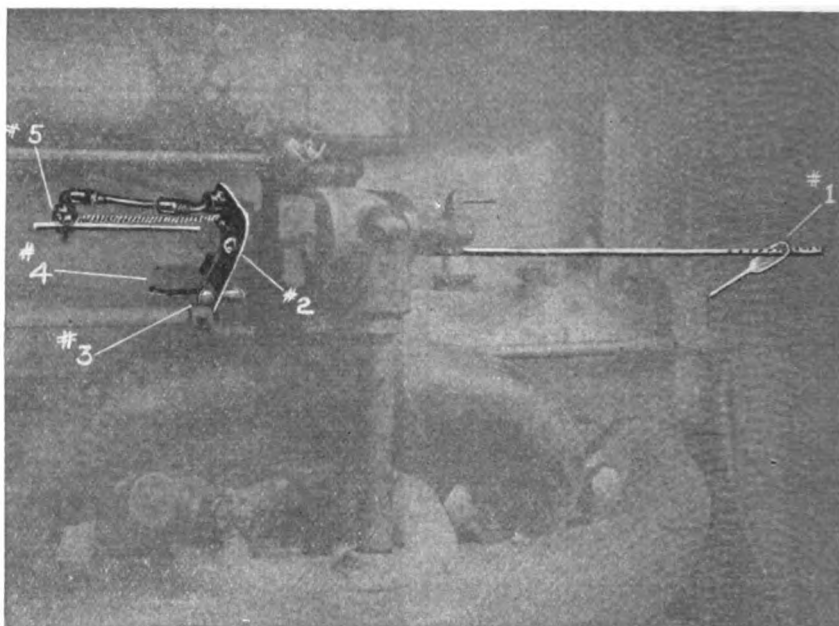
The outfit includes the vulcanizer, 12 Patch-&-Heat Units (6 round for punctures and 6 oblong for cuts)—ready to use—with complete instructions. Extra Patch-&-Heat Units 75 cents a dozen.

C. A. SHALER CO.

2261 Fourth St., Waupun, Wis.



WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS



Fordson Tractor with Governor That Is Operated by the Fan.

they eliminate to a great extent necessity for realigning the axle and wheels, save on tires and protect the crank case, engine and transmission from strain. The cost of the rods is small in comparison with the insurance against repairs they give.



Fordson Governor Controlled by Fan

A GOVERNOR for the Fordson engine that is controlled by the speed of the fan is shown in place on the tractor in the accompanying illustration. This governor automatically opens and closes the throttle as the load on the engine is increased or decreased, preventing it from stalling under a heavy load or racing when the load suddenly becomes lighter.

The balls of the governor are mounted on the fan, which is the fastest revolving unit of the motor, and consequently is subject to the greatest variation in speed. Thus the governor will respond quickly to different load changes. The

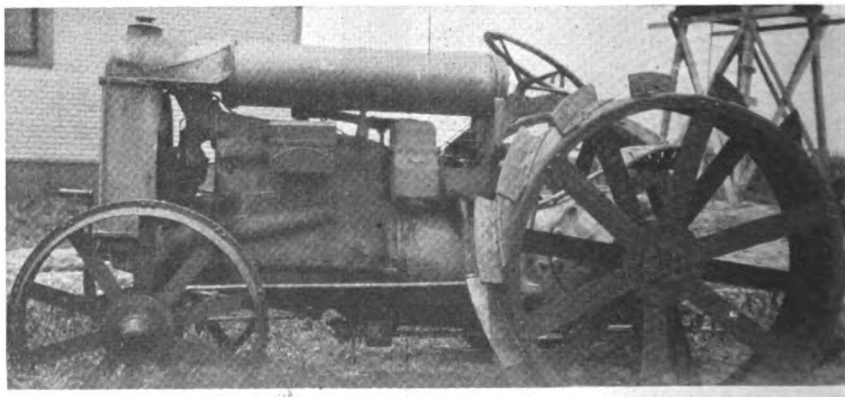
fan speed is nearly twice the crank shaft speed and four times the cam shaft speed. The governor is so attached that it is driven by belt, making its action smooth.

By referring to the illustration, 1 shows the point where adjustment for various speeds are made. The ball assembly or governor head is so constructed that the balls may rock back against the point 3 and save the spring in the head from injury which might occur from racing the motor. A light spring keeps the plunger against the main spring in the head at 2 and also serves to keep all lost motion out of the entire combination. The spring at 1 is to allow the operator from the driver's seat to open the throttle when found necessary for a hard start when otherwise it would be necessary to race the motor.



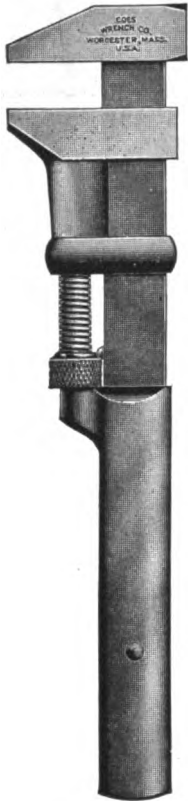
Underslung Tractor Hitch

A N underslung hitch, especially designed for the Fordson tractor, is shown installed on a Fordson in the



Underslung Tractor Hitch That Acts as Shock Absorber for the Fordson.

COES WRENCHES



On the modern farm where everything is being done by machinery, you will find that Coes Wrenches are helping to keep each and every machine in first-class running order.

Coes Wrenches are built to give better service and last longer than any other wrench on the market.

*For sale by all good
dealers*

Coes Wrench Company

Worcester Massachusetts

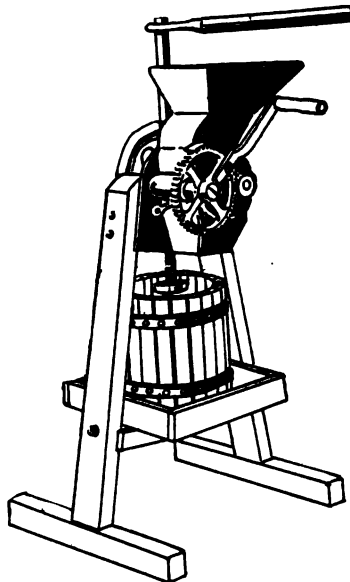
illustration This hitch is attached to the tractor under the crank case and extends back of the drawbar. At the front there is a strong spring that acts as a shock absorber, should the implement that is being hauled strike an obstruction.

The advantages gained from this hitch are declared to be that because it is underslung all four wheels will be kept in contact with the ground at all times; the steering wheels are under perfect control, traction is increased, the spring absorbs all jerks and jolts and the oscillating drawbar automatically takes care of side draft.



Cider Mill for Home

PRACTICALLY every farmer has enough apples that are not salable—windfalls, culls, etc.—from which to make a supply of cider for drinking when sweet and to be made into vinegar.



Good Type of Cider Mill for the Farm.

To produce the cider for home use, or in quantities sufficient to supply a few customers, a mill such as shown in the illustration is needed. This mill provides in one unit a crusher and press.

This is known as a "one-tub, force feed mill." At the top is the crusher, which is of iron and steel, with a steel press screw. The rollers that crush the apples are of wood and revolve at a high rate of speed. The frame is of hardwood, strong and rigid. The balance wheel makes it easy to operate, altho special fittings may be secured so that it can be run by power.

This mill also is so constructed that it may be used to extract juices from fruits other than apples, and is made in various sizes to meet all needs. The mill shown in the illustration has a capacity of from one to two barrels of cider a day.

Alloy Steel on the Farm

CHAPTER VI

Older farmers will remember the days when implements were largely made of wood and of iron. Later, steel, lighter than iron and stronger than wood, largely replaced both. Now, the necessity for still greater strength and endurance, with the least possible weight, is leading to the adoption of ALLOY STEEL.

The automobile—notably the Ford—blazed the way and showed the world the tremendous endurance of Alloy Steel, compared with a much greater weight of ordinary steel.

By Alloy Steel we mean steel to which a small percentage of nickel, chrome, vanadium, molybdenum, or other alloy metal, is added while in the molten state.

Any one of these alloys added to the steel results in making a tougher, denser and more uniform product, and, when properly tempered, insures longer life, under the continual strain and vibration of service. Alloys actually make the steel denser and harder, as well as tougher, by changing the whole character of the structure of the steel.

Alloy Steel should be used in many farm implement and tractor parts, such as forged gears and pinions; all the working parts of the knotters on a binder—and especially the needle; sickle bars and heads, pitmans, crank shafts and crank pins; rods, braces and links; in fact, practically all the small forgings and many of the parts made from rods.

Its use will mean a very great reduction in repair expense and in the costly delays that are caused by breakage.

Farmers, through their associations, and in their dealings with local agents of the manufacturers, should express their wish for farm machinery that employs Alloy Steel in all vital parts.

The use of Alloy Steel in farm tools will give longer useful life to the machines. The reduction of repair expense and the saving in power (horse or gasoline) will amount to a vast sum in the farmer's bank account every year.

Interstate Iron & Steel Co.
104 South Michigan Avenue
Chicago

PROTECT YOUR GRAIN USE CONCRETE GRANARIES

Our Permanent Products 100-Year Corn Crib lasts longer than the life of man and costs less per year than any other crib, even wood.

Permanent Products 100-Year Corn Cribs not only protect your grain from damage by rain or snow; but also from rats, rot, mould, storms, and fire. Increase the value of your crop and property.

Provide best ventilation—driest contents—strongest structure—least expense—most permanence.

Our patented concrete staves provide greater ventilating area than any other type and sheds rain or snow. Heavy steel framework and hoops make ours the strongest crib—the only one with these features. Perfect air circulation and protection insure better grading in market.

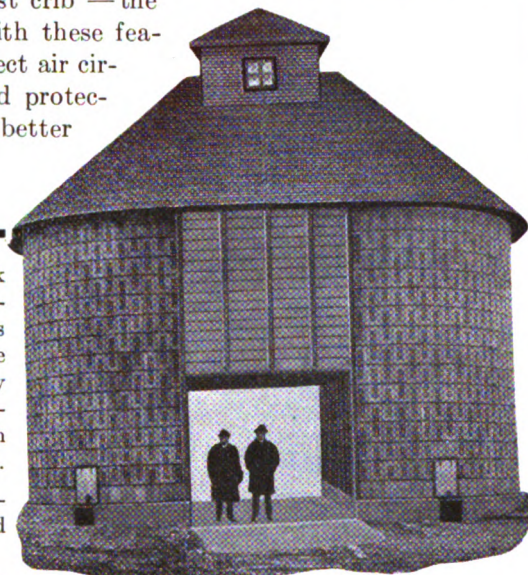


PATENTED

Be sure to ask about the Permanent Products 100-Year Fence Posts—the only concrete posts in to which you can drive staples.

Permanent, inexpensive, strong and good looking.

We will rent or sell mould equipment.



Patented

Make us prove it—Write for cost erected complete with elevator

**PERMANENT PRODUCTS
COMPANY**

15th Floor Marquette Building

CHICAGO, ILL.

— money for your spare hours

You may have a few free hours that easily could be turned into extra dollars. By interesting your friends and neighbors in FARM MECHANICS you can earn a tidy sum each month. No premiums or prizes, but actual cash profits for you. Our plan is liberal—and you know Farm Mechanics! For further information address P. N. R., 1827 Prairie Ave., Chicago, Ill.

Farm Facts Condensed Items of Interesting Information

Binder troubles come from depreciation of the machines while they are standing in the fields. The knottor mechanism of the binder is a delicate piece of machinery and should not be exposed to the weather. If the binder must be left in the field, cover the knottor part with a heavy coating of axle grease and tie an old piece of canvas over the head. advises the Nebraska College of Agriculture. ✚

Hog raisers may accomplish two desirable results by plowing up the barn lots at least once a year, says the United States Department of Agriculture. Hogs need good succulent pasture and protection from the internal parasites, such as roundworms. Turning the soil gets rid of the eggs of the worms and the crop of forage, preferably rye, makes it a profitable operation. ✚

Sudan grass should be cut for hay when the first heads are showing. When cut at this stage the greatest amount of forage of high feeding value is secured, says the Nebraska College of Agriculture. ✚

One-third of the laying hens will have joined the "loafer class" before the end of the season in early October, and culling them out and marketing them will insure greater profits to poultry raisers, says the Kentucky College of Agriculture poultry experts. ✚

Gardens are better off without water than to have just a sprinkle, says the New York State College of Agriculture. Wetting the top soil causes the roots of plants to turn toward the surface for water, and later dry out and perish. ✚

Hens need meat scraps during the summer to lay well, say poultry experts at the New York State College of Agriculture. Do you think that hens can pick up enough feed on range to insure maximum production, the experts add. ✚

Beans are becoming more popular, says the United States Department of Commerce, and this country is not raising enough to satisfy its needs. During April and May 100,000 bushels of beans were imported. ✚

Lambs that are not thrifty and that scour badly and gradually die are probably suffering from worms, says James W. Wilson, professor of animal industry at

the South Dakota College of Agriculture. Sheep should be shut up and kept away from feed for 24 hours and then given a dose of liquid made of one ounce of copper sulphate dissolved in 2 quarts of water. The doses are: lambs, 3 months old, $\frac{3}{4}$ of a fluid ounce; lambs, 6 months old, $1\frac{1}{2}$ fluid ounces; mature sheep, $3\frac{1}{2}$ fluid ounces.



Ducks are profitable but do not usually get the attention they require, says the Nebraska College of Agriculture. Quick growing breeds, hatched following the hatching of chickens will make ample growth by winter. Good ducks can be grown on many meadows with very little grain feed.



Canadian crops promise rich harvest, say reports to the United States Department of Commerce. Winter wheat is free of insect injury and clover and alfalfa have done well.



Feeding Calves

HERE are the nine commandments in dairy calf feeding:

Always weigh the feed. Don't guess.

Avoid overfeeding. Overfeeding is sure to result in scours.

Be scrupulously clean. Clean pens, clean bedding and clean feed fed in vessels that are washed and sterilized daily are absolutely necessary.

Give the calves plenty of clean water to drink.

In feeding milk or gruel, use a thermometer; don't guess at the temperature.

Watch the condition of the calf's bowels. At the first appearance of scouring or offensive odor, reduce the feed and treat for scours.

Be regular in the various operations performed in caring for the calves.

Tie the calves up so they can be fed separately.

Give them as much exercise as possible.



ANOTHER rainy day job—look over the machinery that you will need next week and see that all parts are present and in repair. Which reminds us that the best time to inspect a machine for its weak parts is when you are putting it away for the season. A few notes in a memorandum book set down at the time will help you remember the new parts you should order next winter.

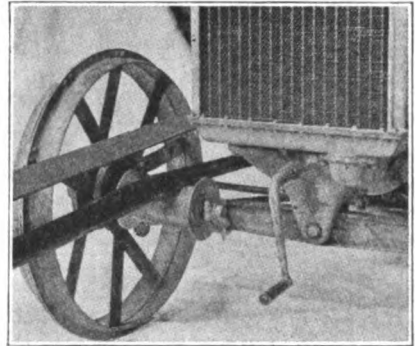


IT takes more heat to warm water than it does the soil. That's why tile drains from the wet spots that show up this spring will result in earlier crops another year.



Ball-Bearing Belt Guide

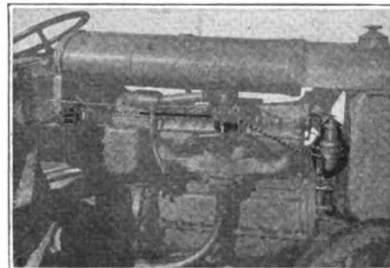
Saves Power—Saves the Belt



A ball-bearing roller Belt Guide for the Fordson that saves its cost by saving power and saving the belt. Prevents the belt from riding on the axle. Keeps it lined up without fraying the edges. Malleable castings are used for attaching to axle. Equipped with roller and ball bearings. A handy accessory that sells on sight. Has been greatly reduced in price.

TACO FLY-BALL GOVERNOR

This is the governor that restrains every ounce of power of your tractor. There is absolutely no loss of power when hard ground is encountered. It holds the engine to practically the same speed under all loads. Taco Governor can be furnished with either ball-bearing throttle valve for extremely close regulation or arranged to operate in connection with regular Fordson valve. Speed can be regulated from the driver's seat with either type.



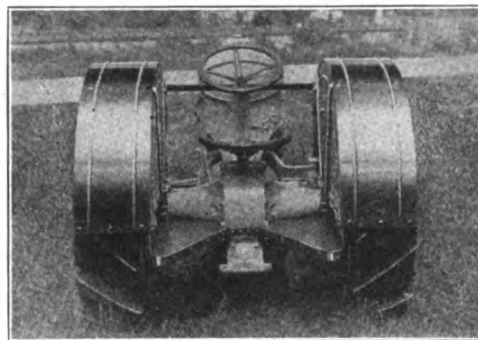
When a lower priced governor is wanted, we have the TACO JR. It does not equal the performance of the fly-ball governor, but for the price asked, you cannot make a better buy.

Write to us or your nearest dealer for complete information on the Taco Line of Standard Governors, Taco Jr. Governors, Taco Quick Stop Automatic Plof Hitches, Taco Binder Hitches, Taco Belt Guides, Taco-Meyer Motors, Leich Magnetic Timers and Rowe Line Drives.

Tractor Appliance Co.
211 Monroe St. NEW HOLSTEIN, WISCONSIN

M-C-F Fenders have strength Built In

All Steel
Construction
Defies
Vibration



Specially
Constructed
for
FORDSONS

Here are a few Reasons why Thousands are Buying

When all is said and done we know that the *MCF Fender* for the *FORDSON* is one that has warranted the demand. Its strength is far in advance of any fender made.

The spoked construction makes it rigid; no loosening up after a few days of tractor operation because the heavy steel U-Clamp is securely riveted to the reinforcement. They fit snugly around the rear axle housing.

It's all in the construction. Even the sheet steel in the skirt and crown is heavy and the electric welding makes one solid piece that resists the vibration.

Everything in it is steel. No parts of wood to break or wear out. Even the rivets

that hold the parts in place will not pull away. They hold.

The platform tells a story in one glance. Low and roomy so one can drive while standing. Cut in so one can safely attach implements to the draw bar, and also give full turning radius to the Fordson.

An extra strong canopy is arranged for *MCF Fenders*. Frame is all steel, constructed in such a way that it is light in weight but rigid to the extreme.

The net weight with the cut-in platform is 163 pounds and 70% of this is reinforcement. It shows what a lasting addition it is when installed on your Fordson.

Michigan Crown Fender Company

Ypsilanti

Huron St. & N. Y. C. R. R.

Michigan



Our Readers Are Requested to Make Free Use of this Department for Questions and Answers on Modern Farming and Farm Improvements

Heats His Tractor

Editor FARM MECHANICS:

Please find inclosed a picture showing my new way of warming up a tractor before starting in cold weather.

If a heavy oil is used, tractors are always hard to start and sometimes will not start at all, depending on how cold it is.

Since it is always best to use a good, heavy oil, my plan of heating is very handy.

I found by taking an old three-burner kerosene cook stove, removing the legs and placing it under the tractor, like shown in picture, it will raise the temperature of the tractor to summer heat if it is covered with a canvas or blanket while the stove is in use under it. The time required to warm it is from 30 to 90 minutes, depending on how cold it is.

This way of heating is well tried out and works like a top every time.

If a man rigs up the place where the tractor is housed or left standing with a small pit, it is no trouble to start any make of tractor, no matter how cold it is.—CHRIS. F. DRIER, Portsmouth, Iowa.



Water Flow for 15 K. W. Electric Generator

Editor FARM MECHANICS:

We are planning to install a power

plant and would appreciate answers to the following questions.

We have a 15 k.w. generator, direct, 110-volt current. Could we get power enough to drive this from a creek with 1,800 cubic feet of water per minute and 10 feet fall?

What kind of wheel would be best?

What size race at flume would it take and would it do as well to carry flume on a slant under ground to the wheel as it would to carry it to a penstock over the wheel? The wheel will be 800 yards from intake to flume.

I like FARM MECHANICS very much.—V. C. LILLARD, Creston, N. C.

Answer—With 1,800 cubic feet of water per minute and 10 feet of fall you can develop:

$$1,800 \times 62.5 \times 10 \times .8$$

$$\text{H.P.} = \frac{33,000}{27} = 27 \text{ H.P.}$$

In which 62.5 = weight of 1 cubic foot water.

.8 = water wheel efficiency.

33,000 = number foot pounds of energy per minute to produce 1 horse power.

One horse power is equal to 746 watts.

One K.W. = 1,000 watts ($746 \times 20 = 14,920$ watts; $1,000 \times 15 = 15,000$ watts).

Thus 15 K.W. = about 20 horse power.

Therefore, your stream will readily develop sufficient horse power to operate the 15 K.W. generator.

I could not say what size flume you would need to carry the water to the wheel unless I knew the speed at which the water would flow. For instance, a flume 3 feet by 6 feet would carry the water if the velocity was 100 feet per minute— $3 \times 6 \times 100 = 1,800$ cubic feet per minute.

If the water flowed 50 feet per minute, a flume 6 feet by 6 feet would be required: $6 \times 6 \times 50 = 1,800$ cubic feet per minute.—THE EDITOR.



Pulley on Separator

Editor FARM MECHANICS:

As a subscriber of FARM MECHANICS, which is sure a great magazine, I am going to ask a question in regard to machinery and will be very thankful for an early reply.

I intend to run a cream separator with a $1\frac{1}{2}$ H.P. gasoline engine, and I'm going to put a countershaft between them. What I want to know is, what size pulleys I must use on the shaft to run the separator 60 turns per minute? The speed of the engine is 500 R.P.M., has a 6-inch pulley and there is a 14-inch pulley on the separator.—R. ROSCOE DEUSLER, Barneveld, Wis.

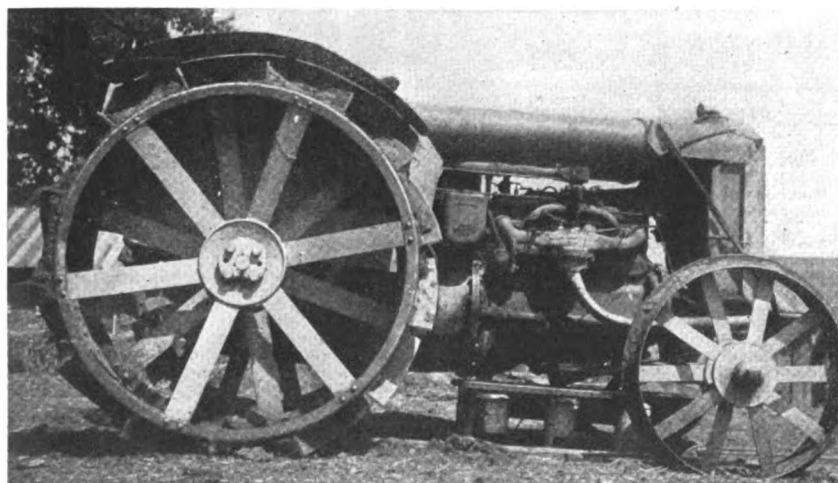
Answer—To reduce the speed of your motor from 500 R.P.M. to 60 R.P.M. at the separator and using a 6-inch pulley on the engine with a 14-inch pulley on the separator, you must have a countershaft with an 18-inch pulley being driven by the engine and a 5-inch pulley connected on the same shaft to your separator.—F. M. SERVICE.



Removing Melted Plug

Editor FARM MECHANICS:

I have a question I would like to ask. We own a company threshing rig. The engineer melted out the soft plug. He could not get the plug out. It had been in the engine eight or nine years and



This Picture Shows How Chris F. Drier Heats His Tractor to Make It Start Easily in Winter.

seemed to be rusted or burnt in so tight he could not get it out with a wrench.

How would be the best way to get it out or to loosen it so we could get it out?—T. S. CRAWFORD, Mt. Union, Ia.

Answer—The best way to remove the soft plug without melting it out would have been to apply a special oil known as "penetrating oil" to the threads.

This oil is made of very fine powdered graphite with ether as a base, and when applied to rust or corroded threads, etc., the ether will enter into the rust and pores of the metal, taking a small amount of the fine graphite with it, which will form a lubricant and make possible the removal of plugs and nuts, etc., which otherwise are practically dead tight.—F. M. SERVICE.



Crimson Clover for Cover Crop

FAILURE to get good results from crimson clover as a cover crop is often due to the use of poor seed, says H. R. Cox, crops specialist of the New Jersey State College of Agriculture, who advises farmers to purchase their seed with care.

The appearance of the seed is a good indication of its age and value. Fresh seed is of a yellow or bright yellowish red color, while old seed is of a dull red or brown color. If the seed you contemplate buying looks suspicious, it is the wise course to send a sample to your State Experiment Station to have a germination test made.

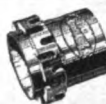
If it is sown alone, crimson clover should be seeded at the rate of about twenty pounds per acre; in mixtures the rate may be correspondingly reduced. On account of the uncertainty with the clover, it is advisable to sow it in a mixture rather than alone.

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Helps for the Housewife

MECHANICS in the HOME



A Kitchen Cabinet Saves Many Steps

By MRS. DORIS W. McCRAY

THE efficient farmer does not keep his tools all over the place, but has a work bench in the machine shed where it is handy for making repairs. Likewise the farm wife needs a tool chest where all of the small equipment is kept ready for use. The woman who goes to one cupboard for flour sifter, another side of the kitchen for spice, opens a drawer of one table for knives and spoons, and hunts up the various ingredients from different places each time she bakes a cake, is losing valuable time. Still more time is lost when she puts the various articles back in their places. With a kitchen cabinet one can sit down during many cooking processes and have necessary articles within easy reach.

There are several good kitchen cabinets on the market but if the man of

the house is handy with tools he can construct one that is not so elaborate but one which will save the housekeeper a great deal of labor. If one already has a good table, it may be made into a cabinet by placing shelves above it, in various sizes, for the different articles. This may be fitted with spice cans made from coffee cans given two coats of enamel paint, and neatly labeled. Large containers may be found for sugar and flour. It is a good plan to have a hinged door for this cabinet, since the open shelves catch dust, and one must be careful to use the oil dust mop or a dampened broom. A wooden box, covered with oil cloth, with a shelf in it, and curtained across the front with easily laundered muslin, will serve for the lower part of the cabinet in which may be kept bowls and utensils.

A cabinet may be made, resembling those on the market, if one is a good carpenter, and the wood is not too expen-

sive. Use well seasoned wood to prevent warping. It consists of a table, with back and shelves above, and to one side, several drawers, and a bin for flour. The cabinet is six feet high, 21 inches deep, and 48 inches wide. The flour bin is fastened in place with loose-pin hinges. The drawers are of different heights, and are convenient for linens, small utensils, and package foods. On the shelves may be placed the containers for spices, rice, coffee and staple foods. Screw hooks are fastened below one shelf and afford a convenient place to hang strainers, egg beaters and cups. In place of one of the drawers may be a door, as in a commode, where utensils may be kept. A drop leaf at the side is convenient for cutting bread. An enamel top for a table can be bought and put on the table part of the cabinet. This top is a suitable place when flowered lightly, for kneading bread. The enamel top is much more sanitary and easy to keep clean. The handles for drawers are bought, and screwed in place. Any grouping of drawers, shelves and cupboard space with doors that is found convenient may be used.

With this arrangement the housewife may have utensils and materials all together. One trip to the cellar, or iceless refrigerator, will bring butter and milk to the cabinet, ready for work. By this simple device, many steps are saved.



Dye Faded Clothes

“JUST because they are faded, many garments with lots of good wear left in them are discarded before the material is worn,” says Azalea Linfield, clothing specialist in the South Dakota State College Extension Service.

“In homemade garments the colors should be set in cotton and linens before making, in ready made garments set the colors the first time they are laundered.”

Directions for setting colors follow:

Blue—One-half cup vinegar, 1 tablespoonful powdered alum, a gallon of water (cold). Keep material in solution two or three hours.

Pink and black—One cup salt, 1 gallon cold water. Keep material in solution for two hours.

Lavender, yellow, light green, and red



A Simple Homemade Kitchen Cabinet, Not so Elaborate as Those Complete Ones Which Are to Be Purchased, but It Helps Make Kitchen Work More Efficient.

—One ounce sugar of lead, 1 gallon boiling water to dissolve the sugar of lead. Keep material in solution for two or three hours.

Leave the material folded and be sure that it is entirely covered by the solution. Move occasionally so that the material will be entirely soaked thru. After leaving in the solution for the required length of time, remove and press water out, but do not wring. Rinse in cold water and hang out as before. Hang to dry in a shady place. Iron on wrong side of material.



Home Battle Hymn

OH every fly that skips our swatters
Will have five million sons and daughters;
Nephews and nieces scores and dozens,
And countless first and second cousins.



FOR stringing heavy beads you can't
beat violin strings.



WHAT can make a kitchen more
attractive than the sun shining
thru window curtains of bright checked
gingham?



DON'T keep the piano closed; it
needs airing just as much as the
clothes closet.



IF the fish that goes into the ice box
is first wrapped in oil paper, nearby
butter, eggs and strawberry shortcake
will not taste as though caught in the
sea.



HEAT lemons slightly before squeez-
ing and note how much more juice
comes from them.



WATER and cleaning agents weaken
glue, paste, and cement and may
spoil fine finishes if not used carefully.



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about twice a year keeps it bright,
makes it easy to clean, and lengthens
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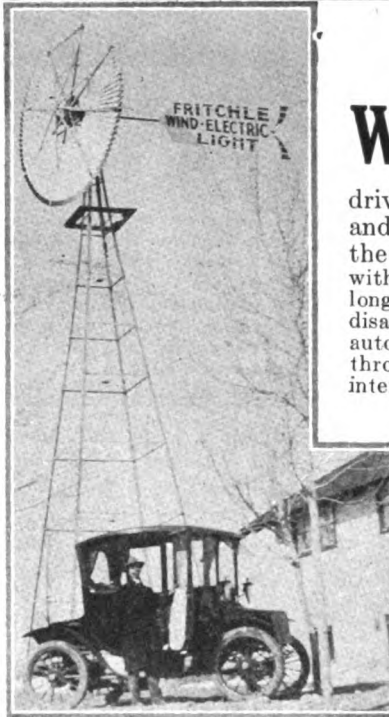
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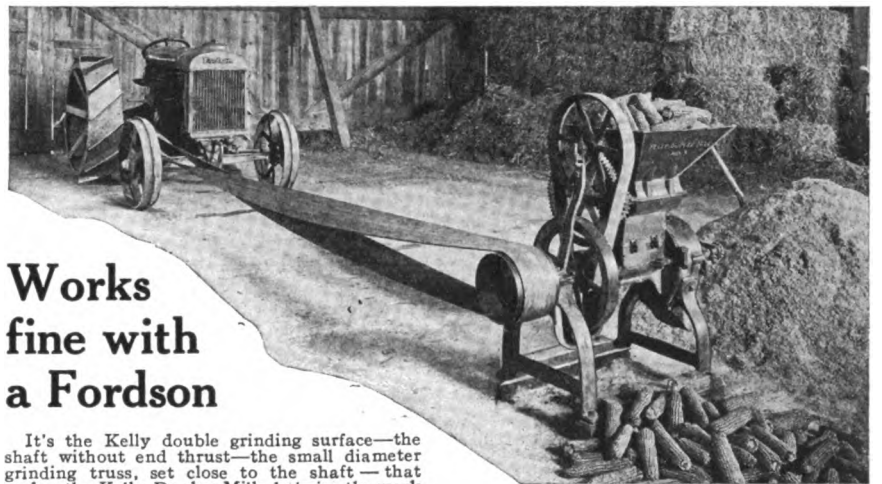
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Tractor Fuel Consumption

Editor FARM MECHANICS:

In the July issue, W. A. Baugh, Holton, Kan., stated he was using twenty-five gallons of kerosene and two gallons of oil in ten hours in his Fordson tractor, which he thought was excessive. In reply to Mr. Baugh, F. M. Service stated "Under the proper load and when handled carefully, a Fordson should operate ten hours on five gallons of kerosene and one-half gallon of oil."

To the initiated the latter statement sounds a good deal farther from normal fuel consumption than Mr. Baugh's figures. It is absolutely impossible to operate a Fordson or any tractor of anywhere near its horsepower for ten hours under any kind of load on five gallons of fuel. Every tractor owner knows this to be a fact, and as further proof the figures on fuel consumption by the Fordson, as well as by other tractors in the official tests made by the Nebraska State University, may be cited.

In the Nebraska test the Fordson tractor under normal load consumed .92 pounds of fuel per horsepower hour. This is slightly over a pint per horsepower hour, since a pint of kerosene weighs only about .85 pounds.

Most gas engines consume slightly more than one pint per horsepower hour and the commonly accepted formula for computing fuel consumption by an internal combustion engine is "a pint of fuel per horsepower hour" since this is an easy basis for calculation. The average of all the tractors tested by the University of Nebraska was slightly less than 9/10 of a pound of fuel per horsepower hour at normal load.

The Fordson tractor is rated as 20 horsepower engine at 1,000 revolutions per minute. Running at this speed, therefore, and under full load the consumption would be not less than twenty pints of fuel per hour or twenty-five gallons per ten-hour run. Since the Fordson is not equipped with a governor, it is easy for the operator to run it well above the speed of 1,000 r.p.m., which will increase its power and also its fuel consumption.

There is not a great deal of difference in the fuel consumption of the different makes of tractors for a given amount of work so long as they are

Mr. Service will answer free of charge for Farm Mechanics readers questions of general interest on Automotive troubles. As a "trouble shooter" he is probably the best equipped man in the industry, having diagnosed the ailments of thousands of automobiles, trucks and tractors. Put your troubles up to F. M. Service—Editor.

properly adjusted. It is easy to increase the fuel consumption by feeding too rich a mixture and in many other ways.

With any tractor the fuel consumption per hour will vary with the load under which the machine is working. The operator usually knows about how nearly to capacity he has the outfit loaded, and if he knows the speed of the motor and the power it should develop at that speed, he can easily determine whether the fuel consumption is much above one pint per horsepower hour, and if such is the case he should of course endeavor to locate the trouble and remedy it. However, he cannot in any event hope to reduce his fuel consumption below a pint per horsepower hour, for the various tractors when operated under ideal conditions and by experts rarely reach this low figure.—ARNOLD P. YERKES.

The statement Mr. Yerkes questions was wrong because of a typographical error. Instead of "five gallons" Mr. F. M. Service says that he meant to say "15 gallons." But this brings up an interesting subject.

How much fuel does your tractor consume? FARM MECHANICS would like to have its readers give their experiences with tractor fuel consumption when performing the various farm tasks. Those who have kept records will add to the information on this subject by writing to the Editor of FARM MECHANICS.—THE EDITOR.

Needs New Gasket

To the Expert:

I have an Overland light four touring car made 1919. Recently I had the main bearings taken up as well as the lower ends of connecting rods. The pistons carry four rings. I replaced the two lower ones—the lowest ring having a cut taken out of the lower corner not

to exceed 1/64 inch. On advice of repair man as well as distributor of these cars, I filled the case with oil. After a few days the oil began working out on top of engine, thru spark plugs and bolt openings. Thinking I had too much oil in, I drew out some until the oil indicator working free shows the oil case to be only half full, yet the trouble continues to such an extent that the motor starts with difficulty with a full battery and I can only drive a few miles until the engine is covered with oil again.

I am a subscriber to FARM MECHANICS and read with interest your replies to trouble calls, so am asking you what I shall do to remedy this.—A. R. NELSON, Mexico, N. Y.

Answer—The mechanic who overhauled your motor evidently did not replace the cylinder head gasket with a new one when he reassembled the motor. It is very hard to get an old gasket tight that has been used once, and the trouble you complain of is generally the result when it is tried. The oil is simply forced thru the union of the head and cylinder block by the compression of the cylinders.

If you will have a new gasket installed and all cylinder head bolts drawn tight, your trouble will disappear.—F. M. SERVICE.



Using Two Cylinders

To the Expert:

Being an interested reader of FARM MECHANICS and especially in the motor trouble advice pages, I would like your opinion on the following:

Suppose a four-cylinder tractor is set so that each cylinder fires every second—what I mean is that after cylinder No. 1 fires, exactly one second elapses until cylinder No. 2 fires, and so on.

Now if cylinders Nos. 3 and 4 were cut off would engine running on cylinders Nos. 1 and 2 develop half the rated horsepower of motor? If cylinder Nos. 2 and 4 were cut off would not the motor develop more power with Nos. 1 and 3 working than with cylinder Nos. 1 and 2? I have a two-cylinder tractor and the firing is timed so that a shorter time elapses between the firing of cylinder No. 1 and 2 than between cylinder No. 2 and 1. Will an engine built this way and timed develop as much power

as an engine firing with exactly the equal length of time between each cylinder? Would not the wear be greater on the bearings of cylinder No. 1 than No. 2 with the firing taking place as in my engine? I understand I would have to have a different crankshaft to change the firing of my engine, but would I not get more power from my engine?—O. S.

Answer—In the first place it is not possible to time a motor as you suggest for two reasons, one of which is that a motor that would fire 1, 2, 3, 4, would have to have a crankshaft that would have the throws all on one side, and if this were done the engine would be so out of balance it would be impossible to keep it together due to the vibration. The second reason is that it is not possible to figure seconds or any length of time in the firing of one cylinder from another, as the revolutions per minute of the crankshaft would vary the time between each explosion, as they were increased or decreased.

The only way any internal multiple cylinder engine can be timed as to the firing of the cylinders is by the position of the pistons relating to each other at the different periods of each of their cycles.

Regarding the cutting out of two cylinders of a four-cylinder engine, the horsepower developed by the ones firing will in no combination equal one-half the rated horsepower, because the two dead cylinders develop friction while being carried that cuts in considerably on the power being developed.

You could not increase the power of your two-cylinder tractor by changing the timing of the engine, as any increase of pulling power would decrease the engine speed.—F. M. SERVICE.



Pistons Worn Out

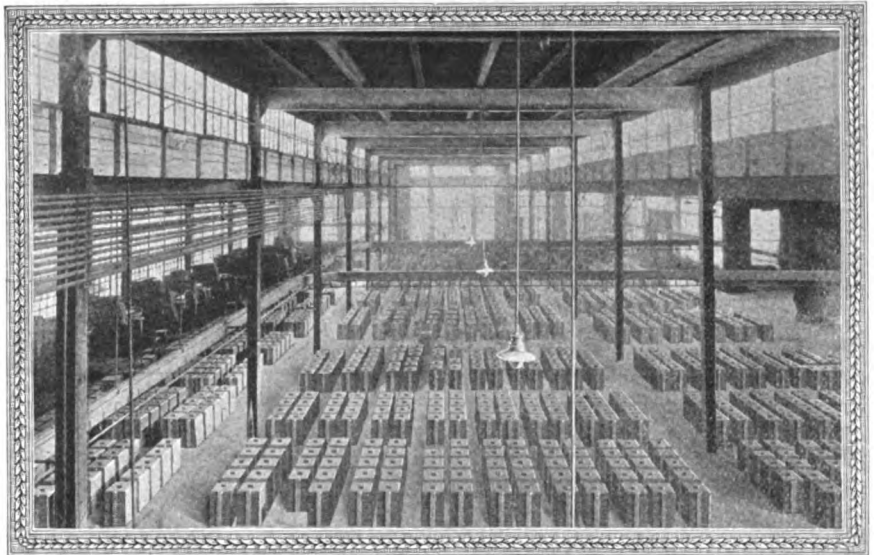
TO THE EXPERT:

I am having trouble with my Oakland automobile, 1918 model, 34 B. The trouble is that it uses too much cylinder oil and rots the spark plugs. It has aluminum pistons. Would that cause the trouble?

Two years ago I bought new aluminum pistons with four cylinder rings. This helped for a while, but it is as bad as ever. Would you advise putting in cast iron pistons?—D. S. FLEMING, Pleasant Hill, Mo.

Answer—We would advise you to install a new set of cast iron pistons. The trouble with aluminum pistons is that while they fit fine at first, they wear much faster than cast iron and soon become so loose as to allow the oil to get past them.

In getting the cast iron pistons, be sure and get ones that are .003 to .005



World's Foremost Piston Ring Foundry

FOR over forty years—in fact from the inception of the internal combustion engine, until 1914—no advance was made in piston ring design, which was worthy of the name. In spite of the best efforts of inventors and engineers, to devise a more efficient piston ring than the ordinary, “leaky” diagonal-cut, plain surface piston ring generally used in engineering practice, no satisfactory solution of the problem was found.

The invention of the Burd High Compression Piston Ring in 1914 marked a new era in piston ring development.

The invention of the Burd Quick Seating Ring in 1920, marked a still greater advance in piston ring design. It revolutionized piston ring manufacture, and won the instant approval of engineers and mechanics because it combined the quick seating feature of a narrow ring, with the wall tension of a wide ring.

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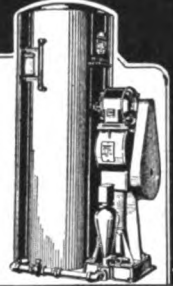


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A year's supply of oil is sent with every Aermotor

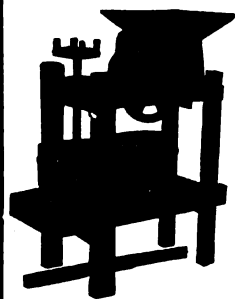


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Shovel is 22½ inches wide—can be raised or lowered from the operator's seat.

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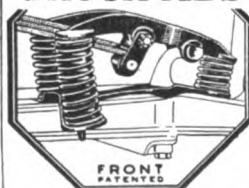
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The "third" spring makes them better. Double coil springs, cushion shocks, third spring checks rebound and side sway. Sedan, Coupe and open car types same price.

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of an inch larger than the ones now in the motor, and you can find out their size by inspecting the piston head on which will be stamped the diameter size. If the new pistons are too tight, lap them in by using a mixture of fine emery or valve grinding paste mixed with oil. Spread this on the piston and by using a round stick thrust thru the crankshaft end of the connecting rod work the piston in head down, moving it up and down and around at the same time. When the piston will pass thru the cylinder without much effort, clean all the emery off the piston and cylinder walls with gasoline. Use great care in doing this, because if any is left it will speedily cut the cylinder when the motor is started.

After fitting in the pistons try each piston ring in the cylinder it is to go in, and if there is more than .006 of an inch between the ends of the rings, throw them away and install new oversize ones. If necessary, file the ends until the gap measures the above clearance.—F. M. SERVICE.



"Sweating a Joint"

TO THE EXPERT:

As a subscriber I should like to ask Mr. Service what is meant by "sweating a joint." It is in connection with soldering?—ALFRED G. REIN, Colby, Wis.

Answer—"Sweating a joint" is a term used in soldering and consists in getting the two pieces of metal to be soldered together, perfectly clean and so hot that the solder will penetrate or sweat between their closed surfaces, welding them perfectly together. This kind of soldering is generally done more successfully with a blow torch than with a soldering copper.—F. M. SERVICE.



Car Hard to Start

TO THE EXPERT:

As I am a reader of FARM MECHANICS and find your information of great value and interest to me, I take the liberty to ask you a few questions.

I drive a Chevrolet "490" and find the carburetion on said machine not to my liking. For example, the carburetor is so far from the head that it takes a long time in cold weather for it to warm up. Consequently I make too much use of the choke wire and that results in diluting of the crank case oil.

I am overhauling my car and do not want to assemble it before I get information on the above.—T. G. IVERSON, Brooten, Minn.

Answer—The trouble you are having

with your motor not warming up is not caused by the carburetor or the length of the intake manifold, but is due to the cold air entering the carburetor and the motor before the motor is hot. Be sure the hot air pipe is connected to the stove on the exhaust pipe and that the joints are fairly tight and you will do a lot to eliminate your trouble. Also in the cold weather you should allow the motor to warm up for a few minutes, running idle before putting it under a pull.—F. M. SERVICE.

Clutch Needs Adjusting

To the Expert:

As you are noted as a good "Trouble Shooter," can you help me in my trouble?

I have a Case 6, 1917 model, Continental motor with a Borg and Beck dry disc clutch. When clutch pedal is shoved in the clutch is still in motion and continues that way, making it very unpleasant in shifting gears.—W. E. BURGO, Monroeville, Ind.

Answer—The trouble with your clutch is that the adjusting plate is too far to the right and does not allow enough space for your clutch plates to separate without dragging. To correct this, remove the small inspection plate so that the clutch can be seen and turn the motor around slowly until a $\frac{3}{8}$ -inch cap screw with a washer under it comes into view on the back plate of the clutch housing.

This cap screw, you will see, screws into an inner plate and slides in a slot in the outer housing. Back this cap screw out two or three turns and when it is loose tap it over to the left with a hammer. Only try it a little at a time, starting the motor and testing out the transmission until the proper location is reached where the clutch holds all right and still the gears can be shifted without clashing. The moving back or forth of this screw carries the inner plate into which it is screwed back or forth with it, and simply increases or decreases the space in which the clutch plates can expand.—F. M. SERVICE.

BOTHERED with mosquitoes? Better see if there are any wrigglers breeding in rainbarrels, tubs, tin cans, horse-troughs or stagnant pools in the back yard. The frequent rains of the past few months have turned many a little nook into a mosquito incubator. Get rid of stagnant water and you will get rid of mosquitoes.

IT isn't too soon to think about collecting a few of the finest specimens of your fruits, vegetables or other crops to show at the county fair this fall.

Fairfax Blood

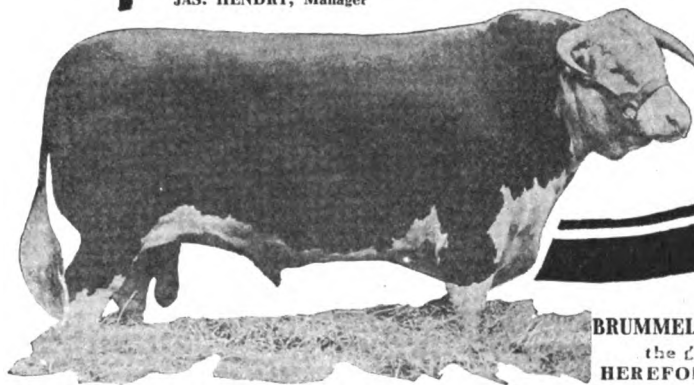
Adds the quality, character and uniformity to a herd that brings fame and fortune to its owner.

Improve your herd with the addition of a Fairfax bull.

A sales list will be sent on request

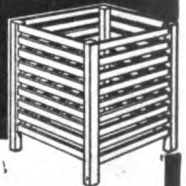
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BUILD your own granary and store your grain until the first heavy shipments have gone. Then prices are almost always higher than at harvest and threshing time.

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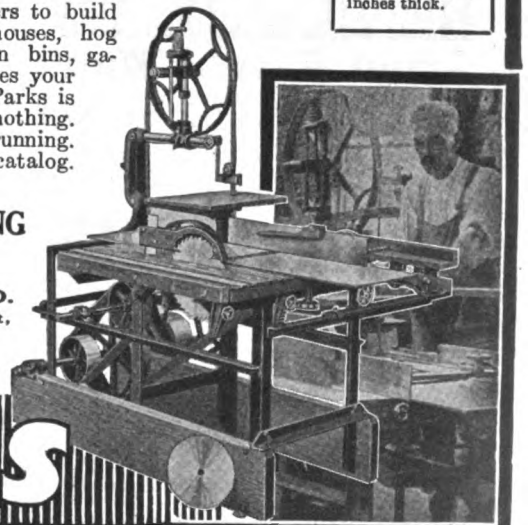
A Parks Woodworker enables farmers to build many things in winter—poultry houses, hog troughs, stalls, shelter sheds, grain bins, garages, barn additions. It capitalizes your spare time. The first cost of a Parks is small and its operating cost next to nothing. Strong, rigid, portable, smooth running. Guaranteed for ten years. Write for catalog. Price \$225.00.

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PARKS



B—Below, the Parks Four In-One, combining Circular Rip and Cross-Cut Saw, Band-Saw, 12 Inch Jointer and Boring Machine. Band-saws material up to 7 inches thick.



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The Willis Iceless Refrigerator is guaranteed by dealer and maker to do all claimed for it; to be perfectly satisfactory or the purchase price will be instantly and cheerfully refunded.

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Radio Department

Installing the Antenna

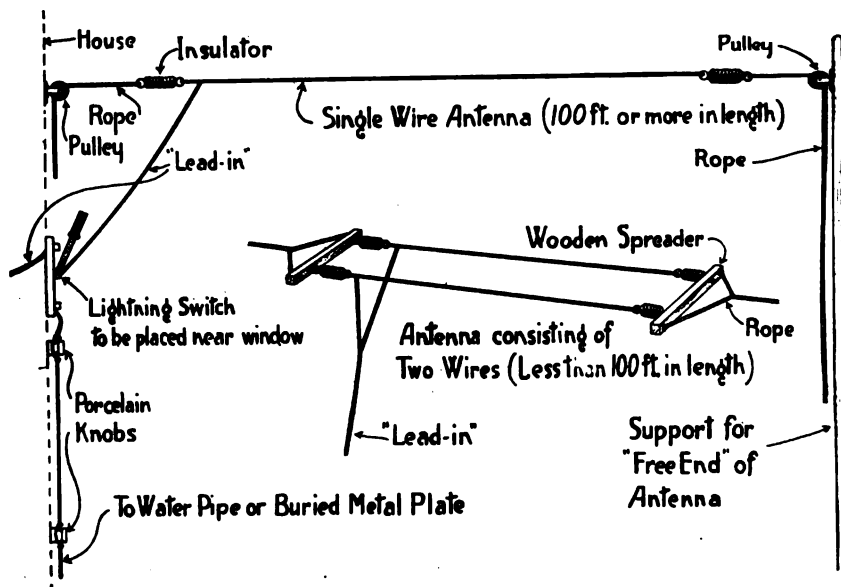
By MALCOM P. HANSON
Chief Radio Operator, University of Wisconsin

MANY types of antenna are in general use. The particular type of antenna used, and its exact location, will in general be determined by the local conditions, such as dimensions of the property, location of convenient high supports, avoidance of interfering trees, etc. Where an equal choice between several antenna locations exists, and it is desired to make use of the slight directional characteristics of the average inverted "L" type of antenna, the free end of the antenna should point away from the station which is to be received most efficiently.

A good form of receiving antenna for

per. Where a great safety factor of strength is desirable, as in commercial installations, or where a long span is used, or the antenna crosses power lines, it is better to employ 7 strand No. 22 or No. 18 phosphor bronze or silicon bronze wire.

Each end of the antenna should be insulated from its support by means of an insulator of electrose, porcelain, glass, or other material. Small insulators, having a creepage path of several inches, will suffice for receiving purposes. The insulator is preferably attached to its support by means of a few feet of rope or sash cord; if a wire is used, a second small insulator is best inserted near the other end of this wire, so as to separate effectively the antenna from the grounded portion of the wire. A pulley at



Drawings Showing Different Types of Aerials and How to Put Them Up and Connect Them.

general radiophone reception consists of a single wire, 100 to 250 feet long, and 30 feet or more above the ground. The antenna should be as far as possible from all surrounding objects and not run parallel to nearby electric wires. In general, the more free the antenna is—the higher it is above surrounding objects—the better it will receive. Great height, however, is not essential, and satisfactory reception has been accomplished even on wires strung inside the attic of small dwellings. Where it is preferred to make the antenna less than 100 feet in length, it should consist of two or more parallel wires, held apart by a wooden spreader at each end. The usual conductor for an antenna consists of 7 strand No. 22 hard drawn copper wire, or of No. 14 bare hard drawn cop-

per. Where a great safety factor of strength is desirable, as in commercial installations, or where a long span is used, or the antenna crosses power lines, it is better to employ 7 strand No. 22 or No. 18 phosphor bronze or silicon bronze wire.

In the case of the single-wire antenna, one end of the antenna is usually continued straight down, from the insulator, to form the "lead-in," which connects the antenna with the instruments. Where a multiple-wire antenna is employed, a separate lead-in wire should be attached, at, or near, the end of each antenna wire. These lead-in wires may be bunched together a short way down from the antenna, or may all remain separate to the point where they enter the building. All electrical connections in the antenna, as well as in the ground system, should be soldered, to avoid poor contacts due to corrosion.

The lead-in is led into the building

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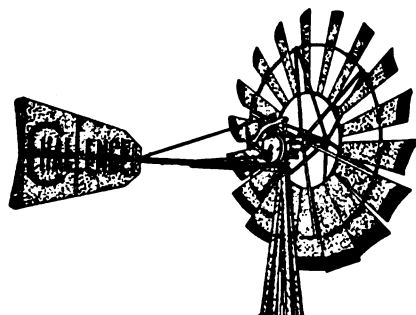
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thru a lead-in bushing or insulator. This may consist of a special electrose insulator, or of an ordinary porcelain tube, as used in house wiring. Inside the house the wiring should be as short and direct as possible, and not near other wires, piping, girders, etc. To avoid electrical losses it is best to locate the apparatus within a few feet of where the lead-in enters the house.

Where conditions prevent the erection of an outdoor type antenna, good results are often achieved with antenna wires strung inside the building, preferably in the attic. Where a long span is not available, an increased number of wires should be used (six, eight, or more). These wires should be kept away from and not run parallel to nearby electric light wiring, piping, or other grounded metallic objects. In the case of indoor antennae dry wood will generally give sufficient insulation.

In some cases where the installation is of temporary nature, it is even found possible to use the eaves-trough or gutter-pipe for the reception of signals.

Indoor coils or loop-antennae are generally not found practicable unless used with many stages of amplification.

Ground Connection

A sufficient ground connection is generally afforded by the water supply system. Where a steam or hot water pipe is more convenient, it may be found to give satisfactory results. Sometimes increased strength of signal results from the use of several different ground connections together. A rod driven into the ground, such as a telephone ground, is generally not satisfactory. A lightning rod ground will often give good results.

The wiring from the tuner to the ground connection should be no longer than necessary. For short leads the wire should not be smaller than No. 18; a larger size wire is preferable, especially for connections exceeding a few yards in length.

To insure good electrical contact with the ground system, both the pipe and the wire connecting to it should be well scraped and the connection preferably soldered.

Antenna Grounding Switch

To avoid the accumulation of electrical charges on the antenna, and to prevent damage to the receiving set in case of nearby lightning, a protective device, which provides a direct path from the antenna to ground, should be installed. This may be a small single pole single throw switch, used to shunt across the receiving set when not in use, or, still better, a single pole double throw switch which disconnects the antenna from the receiving set and connects it directly to ground.

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companies recognize the value of our SECURITY SYSTEM of lightning protection by lower rates on SECURITY rodded buildings. Any purchaser of a SECURITY SYSTEM can have an official Okay on his installation free of charge by writing to us and describing it in detail. Proper installation is the paramount feature in the purchase of lightning rod protection. The



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gives guaranteed protection by our plan of permanently Moist Grounding with the "SECURITY Water Ground." Our policy is to see that the property owner gets protection, and there is a strong distinction between getting guaranteed protection and merely buying lightning conductors. Such protection is obtainable from us. Begin to save now. Delay may mean disaster. An investment in a SECURITY SYSTEM calls for no risk on the part of the investor. His investment is held by us subject to demand if the SECURITY SYSTEM fails to work. Tell us your needs. WRITE TODAY.

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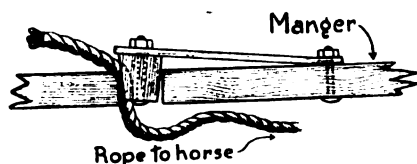
Keystone Driller Company, Beaver Falls, Pa.

HANDY ANDY'S DEPARTMENT

WHERE FARM MECHANICS READERS CAN PASS ALONG GOOD, TESTED IDEAS.

Automatic Stock Tie

HERE is a most convenient stock tie, especially in winter when mittens are worn. It does away with knotting the rope and will hold its animal securely in its stall. A rather large hole is bored



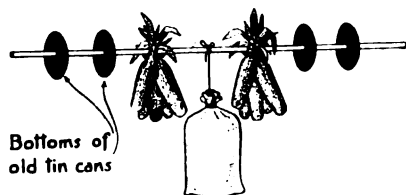
Showing How the Tie Holds the Halter Rope.

in a bar of the manger. Into this is fitted a plug, one side of which has been hollowed to the shape of a rope. This plug is mounted on a spring that is bolted to the bar. By passing the rope thru the hole and pressing in the plug, the animal is tied. And the more it pulls the tighter the plug is drawn into the hole and the more secure is the fastening—J. H. ROSEN, Frazee, Minn.



Seed Corn Protection

WHEN seed corn is stored in the ordinary way rats and mice often get to it with disastrous results. Here is a simple method of keeping the rodents



Round Pieces of Tin Are Barriers to Rodents.

away. Cut several pieces of tin, bottoms of fruit cans will do, into the shape shown in the illustration and slide them onto the rope from which the seed corn is hung. Neither rats nor mice will be able to pass these barriers. Bags of nuts or any other food that is stored may be hung in the same manner with assurance that they will not be molested.—WALTER MOORE, Dahinda, Ill.



Splicing Cable

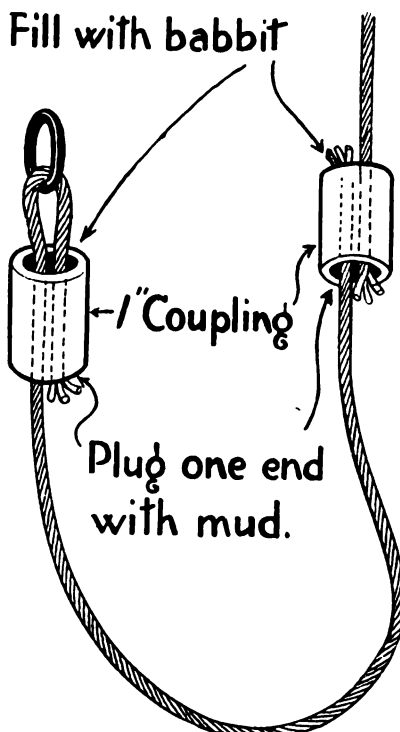
HERE is a simple method of splicing or making a permanent loop in a wire cable. Tape a one-inch pipe cou-

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I, Handy Andy, am famous, because I am found on nearly every farm. When some little thing that would make farm work easier pops into my head I get to work and build it. Farm Mechanics has asked me to pass my ideas along, so as to help everyone do things more easily. I want to pass your ideas along, too. Send them to me, using not more than 200 words, and a pencil sketch or photograph to illustrate it. I will send you \$1 for every idea accepted. Address your letter to me.

HANDY ANDY,
Care Farm Mechanics,
1827 Prairie Ave., Chicago.

pling and slip it over the cable, as shown in the illustrations. Then fill the coupling with molten babbitt metal. It is wise to heat the coupling and parts of the cable just before pouring the babbitt, so



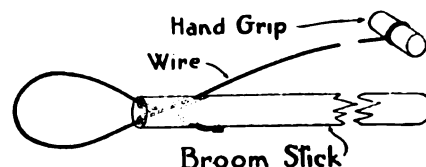
How the Couplings Are Used to Make Splices.

that the metal will have an opportunity to get into all the crevices of the cable before becoming too cool to run.—WILL LOWE, Jetmore, Kan.



A Hog Catcher

TO catch and hold a hog is not an easy task, especially if it is a very large one. A device can be made from a broomstick or a bar of similar size with



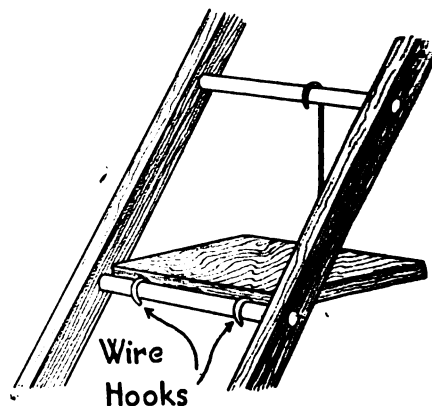
The Loop Catches and Holds Hogs by Their Jaws.

which one man can hold the largest hog with perfect ease. Two holes are bored from the end of bar diagonally so they will reach the surface of bar about two inches above, and on opposite sides. A small wire is then drawn thru, forming a loop at bottom as shown in the drawing. One end is fastened while the other is left loose so that the loop can be drawn tight over the hog's upper jaw. This is a very handy device at ringing time, especially with large hogs.—ROBERT H. NEILL, Ottawa, Ohio.



Shelf for Fruit Picker's Basket

HANGING a basket or pail to a rung of the ladder when picking fruit has many disadvantages. The fruit con-



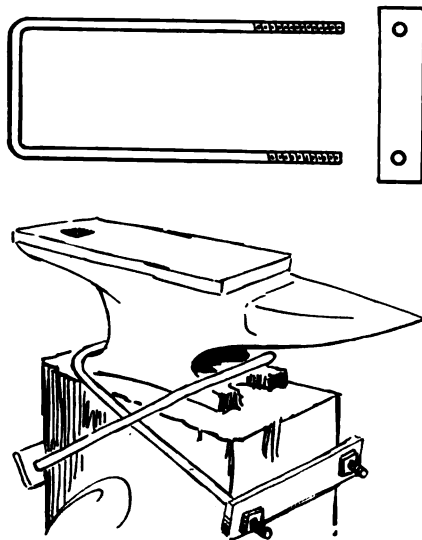
Fruit Picker's Shelf in Place on the Ladder.

tainer is always on the opposite side of the ladder and is difficult to reach. Shown in the illustration is a shelf that can be attached to any ladder, at any height. It is made of a board cut to size that will fit between the side pieces of the ladder and long enough so that each edge is even with two adjoining rungs. A single hook at right angles to the board catches the upper rung, while two hooks fasten it to the lower rung. When in place it forms a shelf that is at hand and still does not interfere with the fruit picker's activities.—KURT HAESS, Town Line, N. Y.



Mounting the Farm Anvil

IN attaching the shop anvil to its block some farmers make the mistake of using too short bolts or lag screws only to discover that within a short time the anvil is moving about under each stroke of the hammer. Nor does frequent tightening help matters much, the anvil soon works loose again and it is usually only a question of time until the bolts are broken, or if screws are used, they have



Braces Hold the Anvil Firmly.

to be replaced with longer ones that extend farther down into the wood block. The cause of this is that short bolts or screws have too little elasticity to absorb the hammer blows transmitted to them thru the anvil. They break or pull themselves out, instead of stretching, but where this stretch is distributed over a longer bolt it has the necessary elasticity to stretch and return to its shape without being strained to the breaking point.

A method having these advantages is shown in the accompanying sketch. It embodies the long bolt idea without its drawbacks. It will hold the anvil securely yet the clamps are long enough to be sufficiently elastic to stretch without breaking under the impact of the hammer blows.—ED. HENRY.

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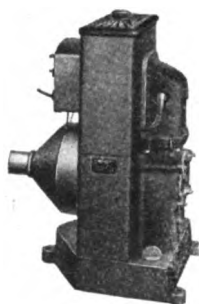
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A Kennel or Poultry Coop

IF you want a kennel, build it like the one shown in Fig. 1. If you want a coop for a few hens, build it in the same way, but make a front and rear door, with upper vents, as shown in Fig 6. In case you do not own a dog, or keep poultry, you can readily adapt the design to a rabbit-hutch or almost any kind of pet shelter you need.

It is generally possible to procure



for little or nothing such boards as are necessary for a small structure like that illustrated. Second-hand lumber is good enough, provided the boards are not badly broken. Two large packing-boxes would supply practically all of the material needed.

Figure 2 shows a cross-section of the kennel, with the parts lettered. First build a floor platform of the dimensions shown in Fig. 3. Make a rectangular frame of boards (A and B), and nail the floor boards to its top.

Figure 4 shows the way to construct the end walls. Cut enough boards 28 inches long to make two walls 3 feet high, and fasten together the boards with battens C, as shown. Use long enough nails to drive thru the boards and battens, and clinch. Mark off the pitch of the roof, and cut battens D to lie along the lines, fitting their ends against battens C. Mark where the door opening is to come, on one end wall, and fasten battens E along the sides. With the battens in position, saw off the corners of the walls, along roof battens D, and cut the doorway.

With the end walls finished, stand them upon the floor platform, and nail and brace them. Cut boards for the side walls, and nail them to the end walls.

One side of the roof should be nailed on, the other side hinged to

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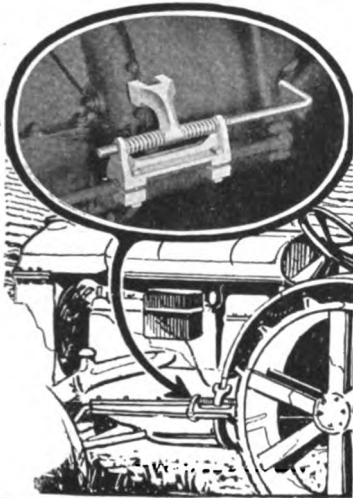
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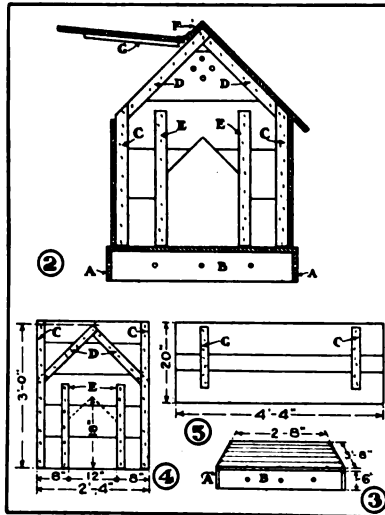
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Milwaukee, Wisconsin

open (Fig. 2). Cut the boards 4 feet
4 inches long, so they will project 5
inches over the ends, and make the
same projection at the eaves. On the
hinged side, nail a hinge-strip along

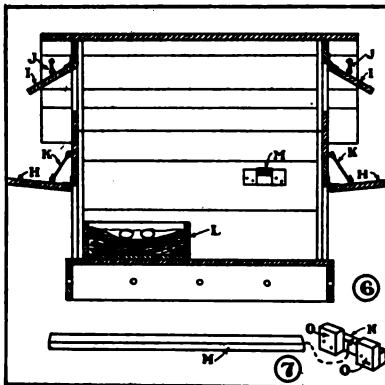


the ridge (F, Fig. 2). Figure 5 shows
the hinged section. Cover the roof
with roofing-paper to make it tight.

Bore several holes thru the ends
of the kennel in the gables as shown,
for vents; also a series of holes
thru the floor frame so there will be a
constant circulation of air beneath the
floor.

Figure 1 suggests how to trim the
doorway with 1 by 2-inch strips.

If you build a poultry coop, make
the end doorways 12 inches high, and
cut the tops of the openings square.
Make the upper openings or vents 8



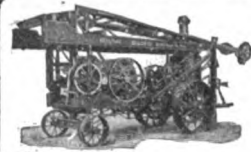
inches high. Screw hooks J into the
under side of the roof to hold shut-
ters I open, and bend hooks K out of
wire and fasten them as shown to hold
shutters H open.

Get a small box for a nest, and
place it in the coop inside of the rear
door. Cut a 1 by 2-inch roost (M),
and fasten a socket built up of blocks
(N and O, Fig. 7) to support the
ends of the roost.

Protect the outer surfaces of the
kennel or coop with paint, and white-
wash the walls inside.

(Copyright, 1922, by A. Neely Hall)

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GET patent yourself. Complete instructions, \$1. CECIL CUTTING, Campbell, California.

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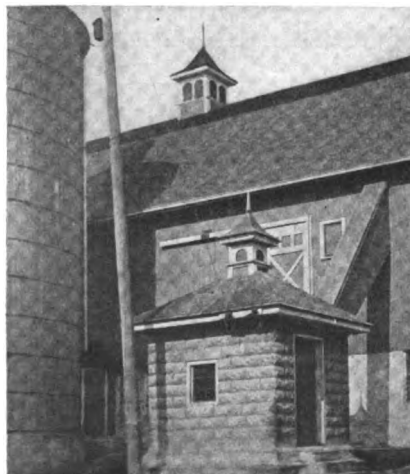
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A Farm Power Plant

WILLIAM KERBER, an Illinois farmer, operates considerable machinery by electric power. The current is taken from a commercial company whose lines pass conveniently near. At one corner of the barnyard a small concrete power house has been built which shelters a 20-horsepower motor belted to shafting located on the second floor of the barn. The belt housing can be seen in the photograph just behind the little concrete building and extending upward to the side of the barn. On the barn floor are located a husker and shredder, a feed grinder and a few other small machines which may be operated with belted power. At the power house the shaft extends thru the wall and termi-



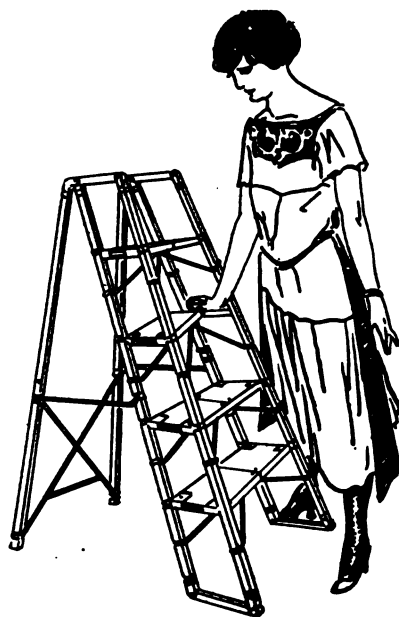
Concrete Power House.

nates in a belt by means of which the silo filler can be operated. The cost of power has been found to average only two-thirds of what was the case with gasoline before the farm was electrified.

Convenience and labor saving have been found to be of even greater moment than lower power cost. The elimination of "motor trouble" covers a number of annoyances and difficulties familiar to everyone who handles gasoline engines. In winter, especially, this feature commends itself strongly. There are no radiators to drain, no cold motors to tax one's patience. The equipment is always ready to do the work expected of it and only the turning of a switch is needed to start it into operation.

—ORIN CROOKER.

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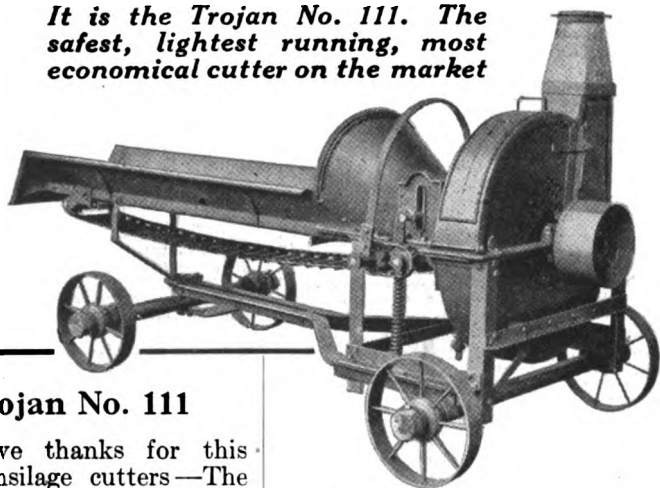
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This is the cutter with Hyatt Roller Bearings

It is the Trojan No. 111. The safest, lightest running, most economical cutter on the market



The Trojan No. 111

Farmers. Give thanks for this greatest of ensilage cutters—The Trojan No. 111. It is the result of 25 years cutter-manufacturing experience. In it you have the one machine that combines every desirable feature of the old-fashioned cutters with new time-and-money-saving improvements exclusive with The Trojan No. 111.

Note These Features

Hyatt Roller Bearings—insure easy and efficient operation with an 8 or 10 H. P. engine.

Automatic Clutch Pulley—releases power instantly thus eliminating all danger to both man and machine.

Indestructible Steel Flywheel—has unusual momentum which prevents "speed-ups" or "slow-downs" as size of load changes.

Overhead Automatic Reverse Lever—always in reach. Gives instant reverse regardless of operating speed.

Absolute Safety—every moving part thoroughly guarded to eliminate dust, dirt, and danger.

Ball Thrust Bearing—eliminates end play.

Four Wheel Pressed Steel Frame—the lightest, strongest, most portable cutter for its size now made.

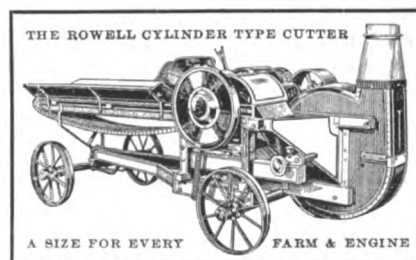
Write for FREE BOOK

Make us prove every claim for the Trojan No. 111. Ask us to send you our Free Book filled with actual photographs. See every working part inside and out. Let the plain facts show you why Trojan No. 111 is a better cutter for less money than others. A penny post-card, mailed today, will bring complete information and prices.

If you prefer The Cylinder Type Cutter

Farmers who use cylinder type machines have nothing but praise for The Rowell "Automatic" Ensilage Cutter. It has been giving 100% satisfaction for more than 20 years. No matter how tough the job, it cuts its way through as quickly and as easily as a lawn-mower runs through grass.

It is absolutely safe—every moving part protected. Has Safety Clutch which releases power instantly. The Cutting Cylinder cuts evenly and cleanly—insuring perfect silage. Built to last a lifetime.



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"Filled a 12x30 silo in seven hours, using 14 H. P. engine." "I could not and would not be without my Rowell." "Filled nine silos last fall with no trouble whatever."

Complete Description

Send us your name and address on a penny post-card and we will mail you an amazing array of facts and photographs that will give you new ideas on ensilage cutters. Write today while there is still time.

THE I. B. ROWELL COMPANY
WAUKESHA, WISCONSIN



The Great Unanswerable

Flub: "Don't you and your wife ever agree on anything?"

Dubb: "Well, we both seem to agree that she made the mistake of her life in marrying me."



Suspicious Aroused

"Why did she divorce Jack?"

"Well, she was his fourth wife and she got to thinking that perhaps his other three wives hadn't divorced him for nothing."



Breaking the News

"Daddy, do you know what I'm going to give you for your birthday?"

"No, my boy, what is it?"

"I'm going to get you a brand new straw hat."

"That would be fine, but I already have a straw hat."

"I know, daddy, but I sat on it this morning."



Sure Sign

"How do you know they are married?"

"Because he bought tickets in the balcony to the matinee."



For Once He Was Wrong

"This hotel," declared the clerk proudly, "is run on the theory that the guest is always right."

"Fine," declared the man who had been there a week. "I don't owe you a cent!"



No Jurisdiction

"Gentlemen of the jury," pronounced the judge at the conclusion of a case in which the defendant had been pronounced guilty in record time, "you have done your duty fairly and impartially. You are now discharged."

"But you can't discharge us, Your Honor," objected the foreman, pointing to the plaintiff. "We were hired by that man."



Prime Necessity

Teacher: "If George Washington came back to life, what do you suppose he would do first?"

Pupil: "Get a pair of long pants."

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FARM


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A Monthly Magazine Featuring Farm Improvements
Machinery, Equipment, Farm Buildings



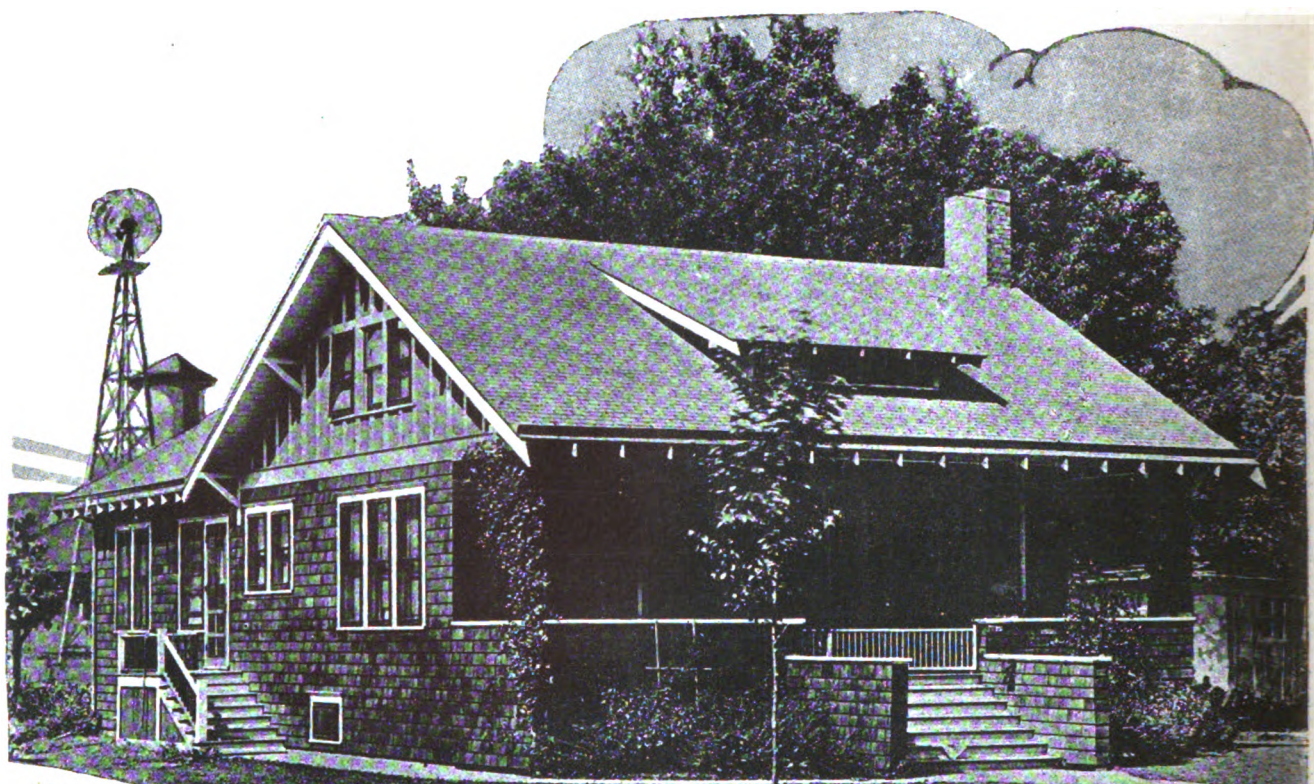
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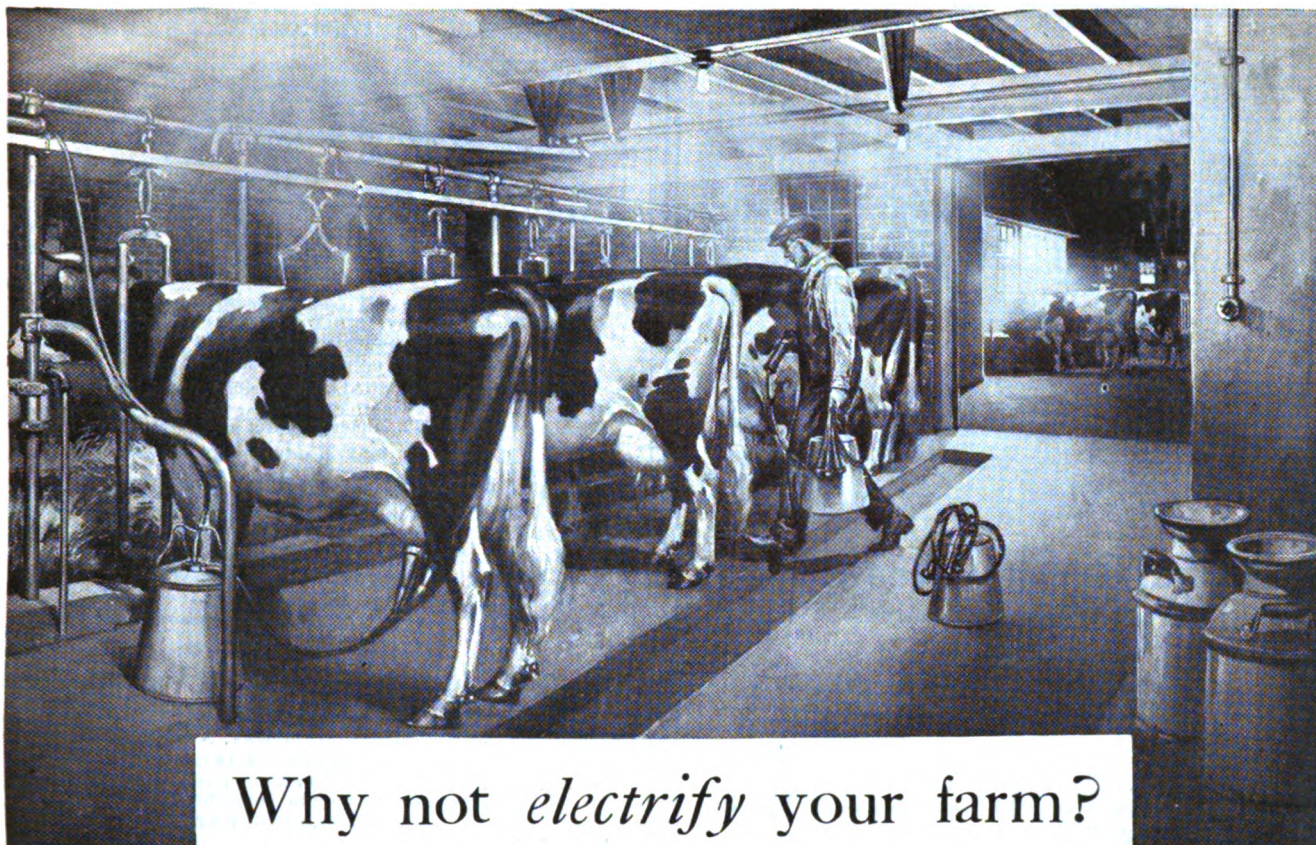
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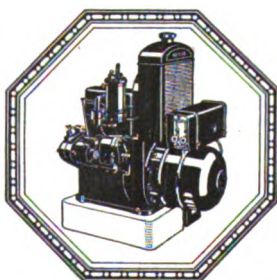
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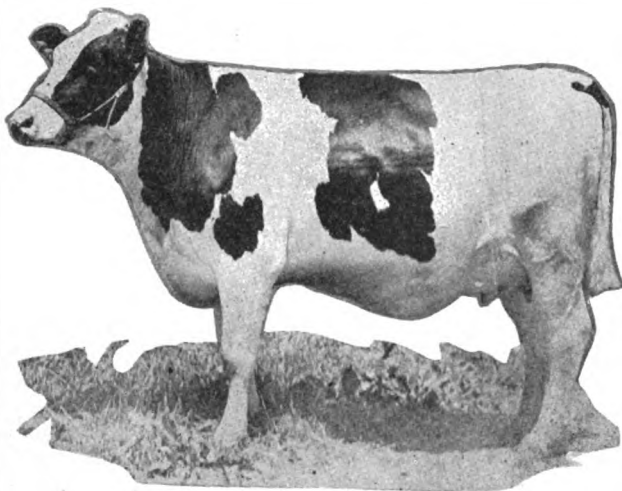
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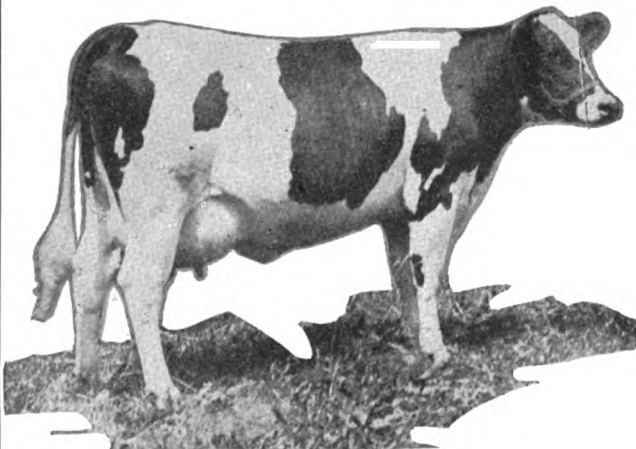
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Original Wide Spreading Spreader

New Idea and Nisco are one and the same machines

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The New Idea Spreader Co.
COLDWATER, OHIO

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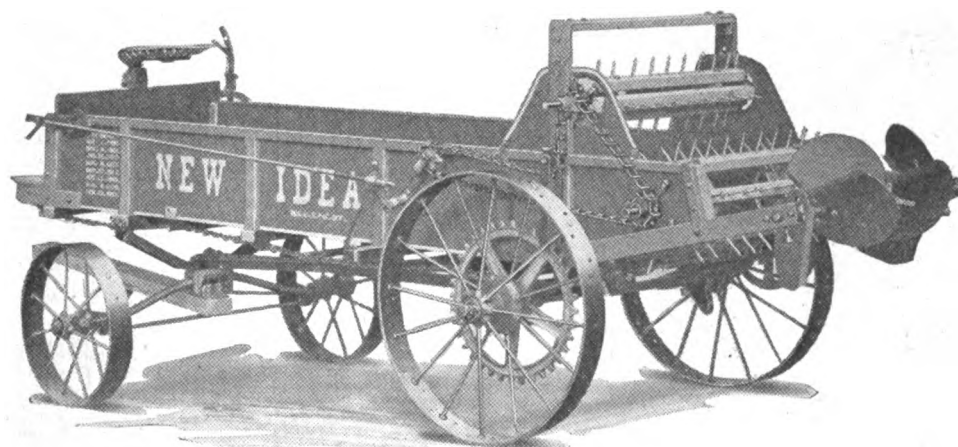
Look ahead to Fall. The straw is longer on this season's crop. That means more manure to haul. *Will your spreader stand the gaff of another season's hard service?*

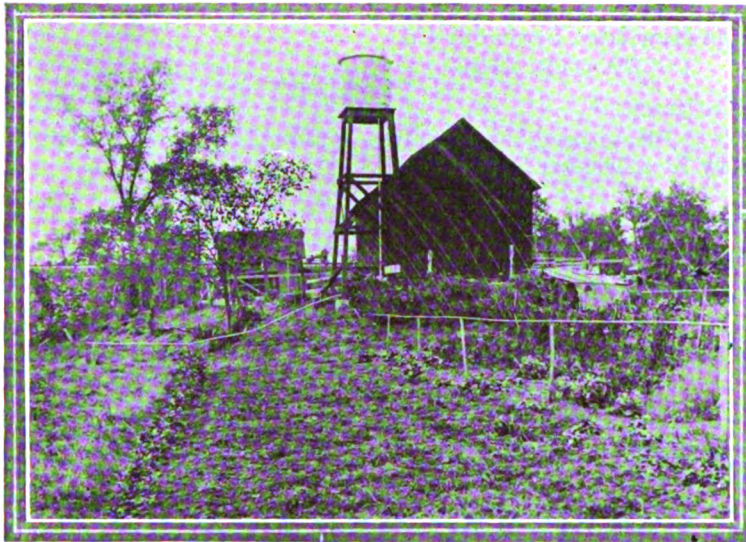
We strongly advise, if you need a spreader this Fall or Winter that you place your order now for this Original Wide Spreading, light draft Spreader. You'll be surprised at the new low prices on all types of New Idea Spreaders. *Send in the coupon today for complete information.* Or see your nearest dealer.

The New Idea Spreader Co.

"Spreader Specialists"

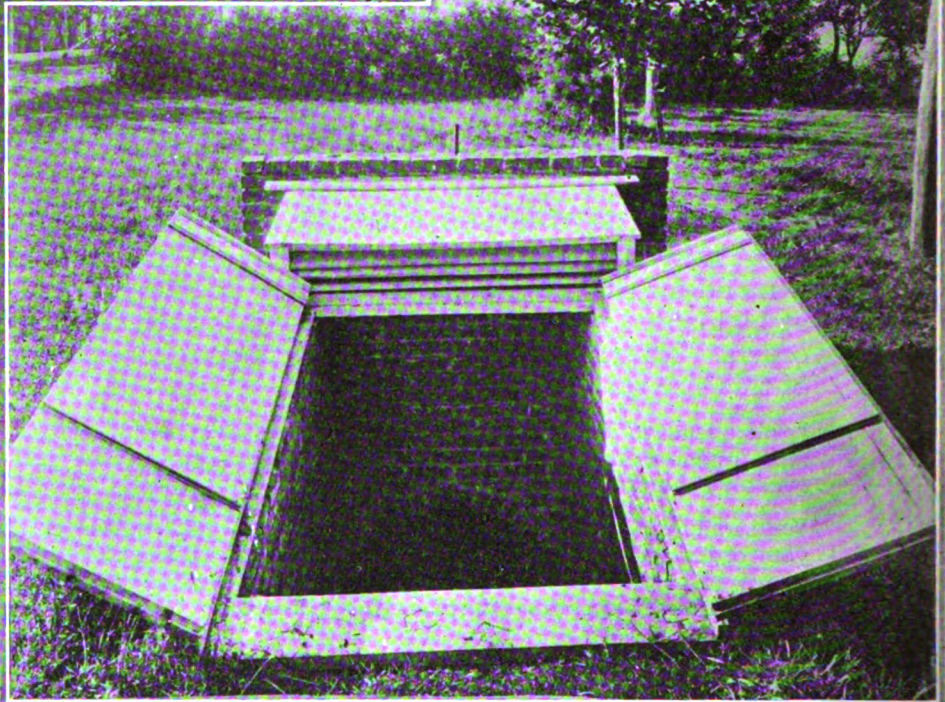
COLDWATER, OHIO





A Small Spring, Dug Out and a Hydraulic Ram Installed, Keeps an Elevated Tank Filled with Water and Supplies the Pressure for the Overhead Irrigation System Shown at the Left. The sprinklers are water pipes with holes bored in them at intervals.

Out in Nebraska There Is an Occasional Storm That Sends the Inhabitants of That Section Underground. The "cyclone cellar" shown at the right is a combination structure, built so that it is used for storage of root crops. At the same time the owner has a place of refuge when it is necessary.



At the Left Is the Office of Coldstream Farms, Lexington, Ky., Showing How Its Owner Has Made Use of Unique Chairs and Has Provided a Place Where the Farm Business May Be Transacted.

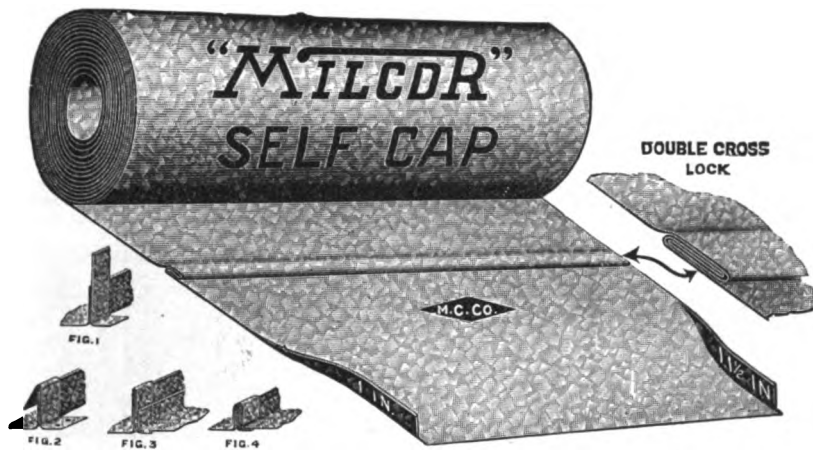
To the Right Is a Smiling Young Man Who Is Doing What Many Farmers Do—Aerating the Milk. The aerator is a double valve pump, designed by C. W. MacKenzie, Waverly, Ind.



"MILCOR" Metal Roofing

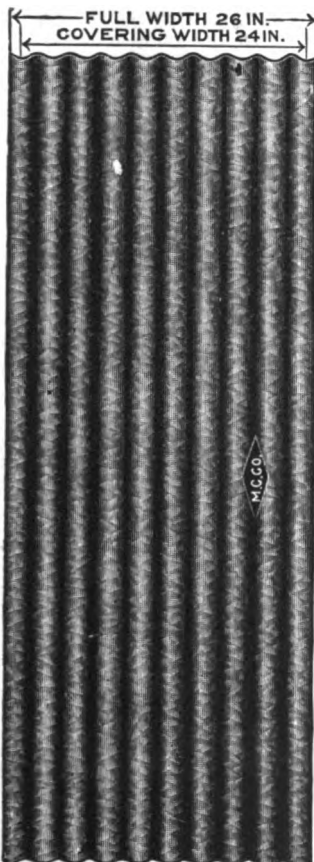
Protects Lives and Property

From Fire and Lightning



Made of Tight-Coat Galvanized Steel

And no other
Roofing will
afford the same
service and
protection at
the same
cost



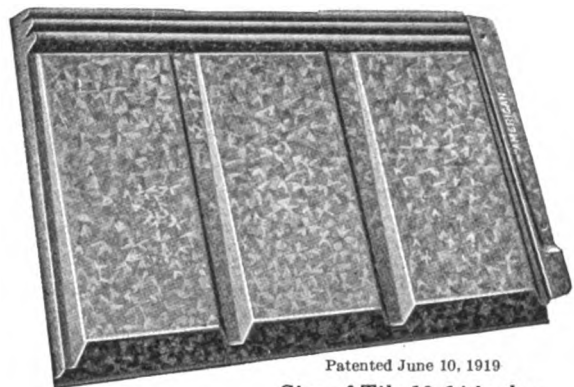
Save 20% on Insurance

AMERICAN
Metal Tiles

are the most approved
style of fire and lightning
proof metal tiles. This
artistic roofing now
made of

ZINC

Also IX Terne Plate, gal-
vanized after formed or
painted both sides.
Everlasting.



**Detail Drawings and Complete Instructions, Which
Make Laying Easy Furnished on Request**

If your dealer cannot supply you, write us

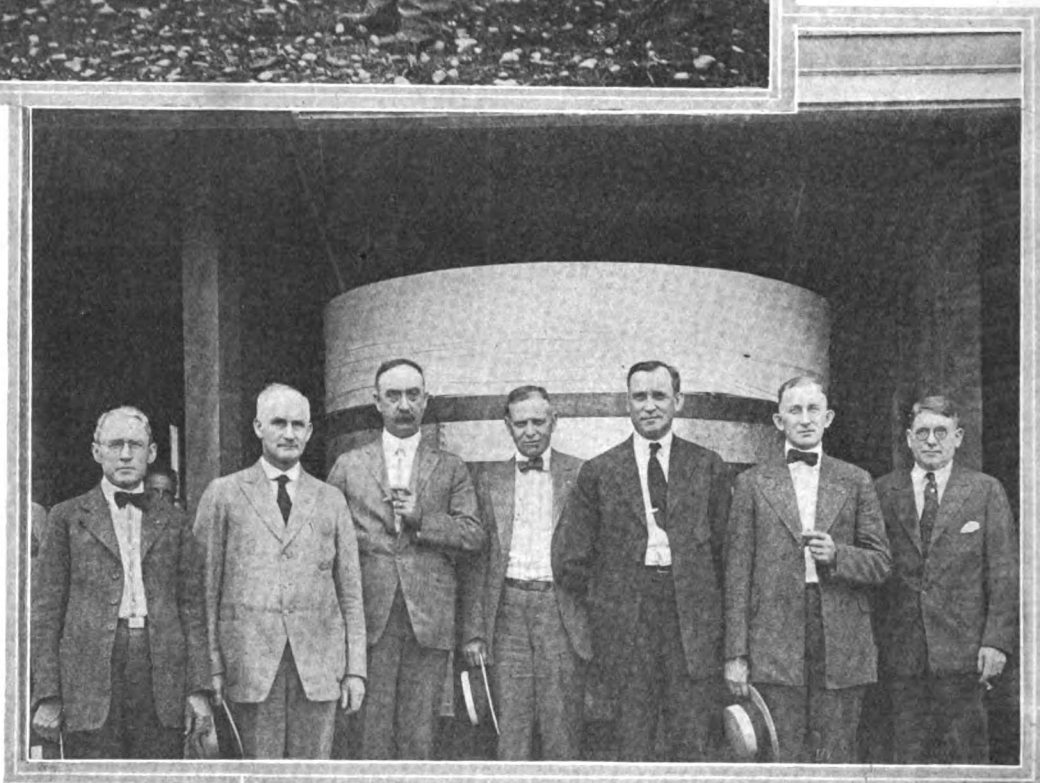
**MILWAUKEE
CORRUGATING
COMPANY**

MILWAUKEE KANSAS CITY MINNEAPOLIS



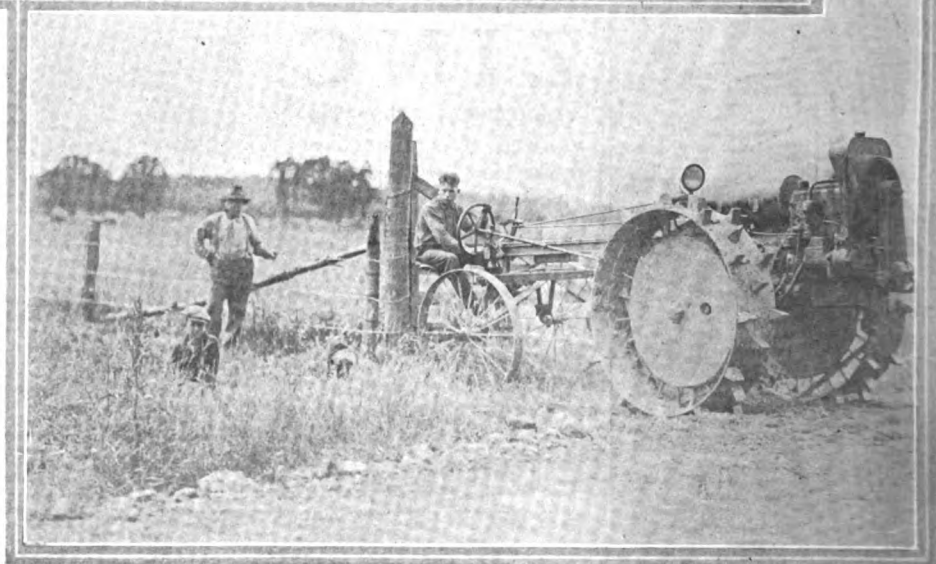


Goat Power Is Used Exclusively on the Small Farm of Elton Schoonmaker, Near Schenectady, N. Y. The goat furnishes the power for plowing, harrowing and considerable hauling. The illustration shows Mr. and Mrs. Schoonmaker and "Bobby" at work.



Above Is a Cheese That Was Recently Exhibited at a New York State Dairy Show. It weighs 12,000 pounds and required 125,000 pounds of milk. The men in the foreground were active in promoting the show for the benefit of the dairy industry.

Here Is a New Use for the Tractor. This farmer attaches his power machine to the fencing and by careful operation of the tractor stretches the fence and holds it in place until it is securely fastened to the posts.



"Blair Bargains"

IN AUTOMOBILE and RADIO SUPPLIES

We offer the following up-to-date supplies, for immediate shipment from stock, on receipt of the price:

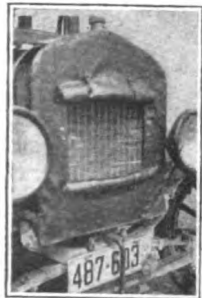
"Pyramid" Brand Spare Tire Covers. Perfect fit for all sizes. Cover tire and not rim. Choice of 4 grades—all in plain black:

1. Black enameled drill, bright grain finish.
2. Black imitation patent leather.
3. Grain-finish imitation leather; will never crack.
4. Long-grain leatherette; will never crack.

Prices, by Parcel Post, Prepaid

Grade No.	30x3 1/2	31x4	32x3 1/2	32x4	32x4 1/2	33x4	33x5	34x4 1/2	35x4 1/2	35x5	Over 35
1	\$2.00	\$2.20	\$2.50	\$2.80	\$3.10	\$3.40	\$4.90				
2	2.70	2.90	3.30	3.70	4.10	4.50	6.00				
3 & 4	3.60	3.80	4.30	4.80	5.30	5.80	7.30				

Write for prices on covers with white tread or narrow white stripes in seams. In ordering give size and grade wanted. We also quote on special lettering—name of car and town.



"Pyramid" Radiator Covers—with adjustable opening. Made of fine quality dull black leatherette, with bright black, artificial patent-leather edge, and thick Kersey lining. Flexible steel straps hold cover firmly in position and make a snug fit. See prices below.

"Pyramid" Radiator and Hood Covers. Method of fastening hood cover leaves engine hood free to raise and lower.

Prices, by Parcel Post, Prepaid

	Ford	Chevrolet or Dodge	Buick 4 or 6	Studebaker
Radiator cover only	\$2.95	\$3.75	\$3.75	\$ 4.75
Radiator and hood cover	5.00	7.25	8.00	11.00

Write for quotations on both styles for other cars.

Batteries for Automobiles or Radio

Automobile Battery, 6 volt, 100 ampere hours	\$20.00
Automobile Battery, 6 volt, 80 ampere hours	18.00
Radio A Batteries	Same as above
Radio A Dry Battery, re-chargeable	\$ 5.50
Radio B Dry Battery, non re-chargeable	2.85

All batteries high class, made of best of materials; workmanship guaranteed.

Crosley Radio Sets. "Better—Cost less." Developed in Crosley plant by their own engineers; manufactured in large quantities by special machinery and sold at a very narrow margin of profit.

Crosley Harko Senior Receiving Set, built to supply demand for low cost outfit for 125 to 500 mile service. Complete, without tubes, batteries or phones.....\$20.00

Crosley Receiver No. VI. Combines one-stage, tuned radio frequency with tuner and audion detector, enabling operator to eliminate interference. A long-distance set. Price, complete, without the tubes, batteries or phones.....\$30.00

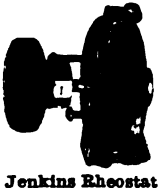
Crosley Receiver No. X. Consisting of Harko No. VI above described and two-step amplifier, combined in one handsome cabinet. A long-distance receiver of great power, using 4 tubes, easy to tune, and giving satisfaction for both nearby and distant signals. Complete without tubes, batteries or phones—by express, prepaid.....\$55.00

Send for the Crosley catalog, giving full details of these and other sets, as well as independent units and parts.

"Basco" Head Phones. Comfortable, giving clear reproductions of signals. By parcel post, prepaid.

2000 ohms—\$6.00
3000 ohms— 7.50

Jenkins Vernier Rheostat. Indispensable for fine adjustment on radio frequency and detector tubes.....\$1.75



Jenkins Rheostat



Ekko Phonograph Adapter—to attach head phone to tone-arm of your phonograph. Uses any make of phone. Most satisfactory way of hearing radio. Price, by parcel post, prepaid\$3.00

Hulbert Battery Charger. For charging your own "A" and "B" radio batteries, at home. Vibrative type rectifier for use on alternating current. Charging rate decreases from 7 to 10 ampere down to 2 or 1 ampere, as battery becomes charged. Economical in electricity and saves strain on battery. Has no spring tension, and only one moving part.

Prices, by express, prepaid:

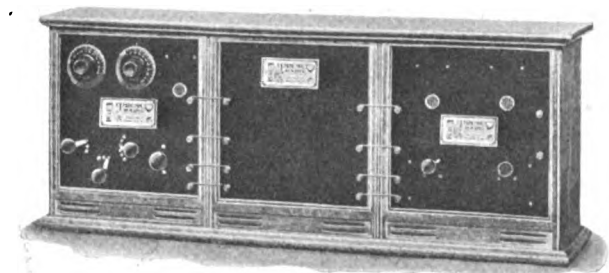
For A batteries only, like cut.....\$18.00
For A and B batteries..... 21.00



Audio Phone Loud-Speaker

Audio Phone Loud Speaker. Like cut, a handsome loud speaker and horn that gives a clear note without distortion. Needs no "A" battery; uses same "B" battery as your set\$40.00

"Treco" Radio Set—Complete, ready to use. This famous set, made by one of the oldest and largest radio concerns in the country, is now offered, for the first time, complete, with tubes, batteries and head phones or loud-speaker horn. In order that it may be set up and started by an expert we will arrange with your nearest dealer to supply you with this complete outfit, set up, ready to receive local or long-distance broadcasting.



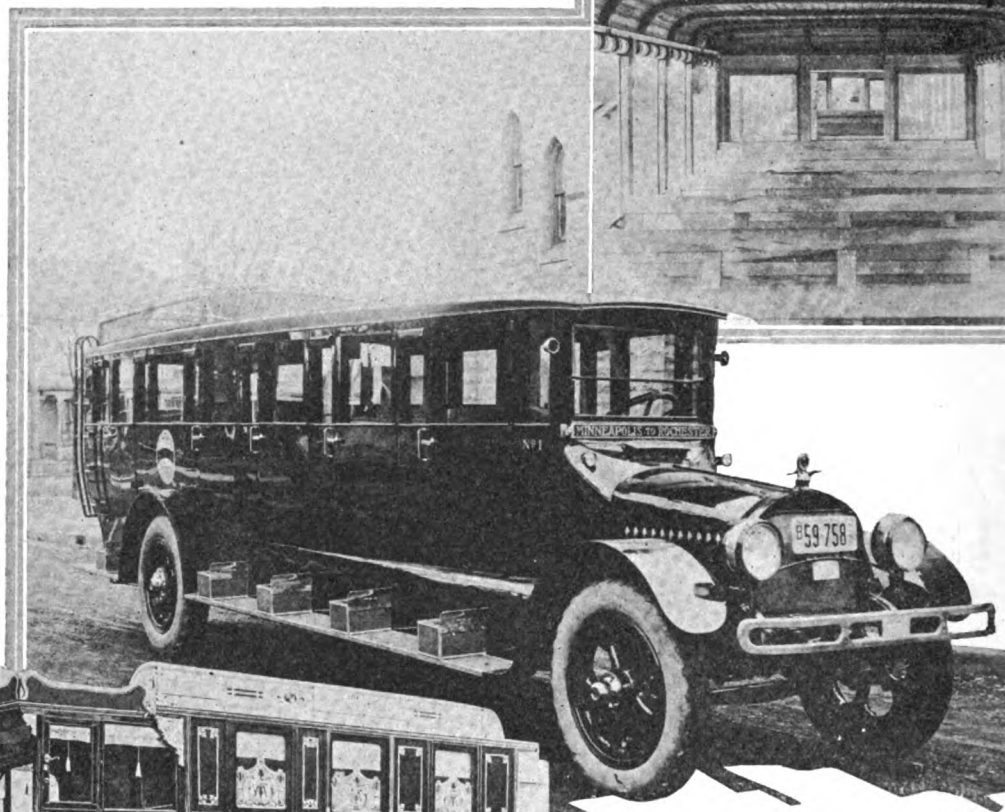
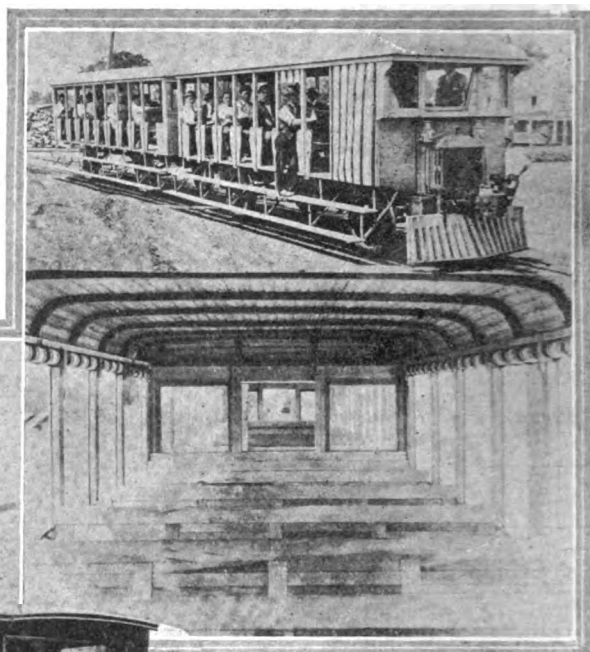
Complete with three tubes, A and B batteries, double head phone, antenna wire, insulators and lightning arrester—ready to install.....\$161.50
Same as above, but with Audio Phone Loud Speaker instead of head phone..... 194.00
Price, without batteries, tubes or head phones..... 104.50

Remit by check or money order. All goods sold on the prompt money-back plan

Mitchell Blair Co.

1429 South Michigan Ave., CHICAGO

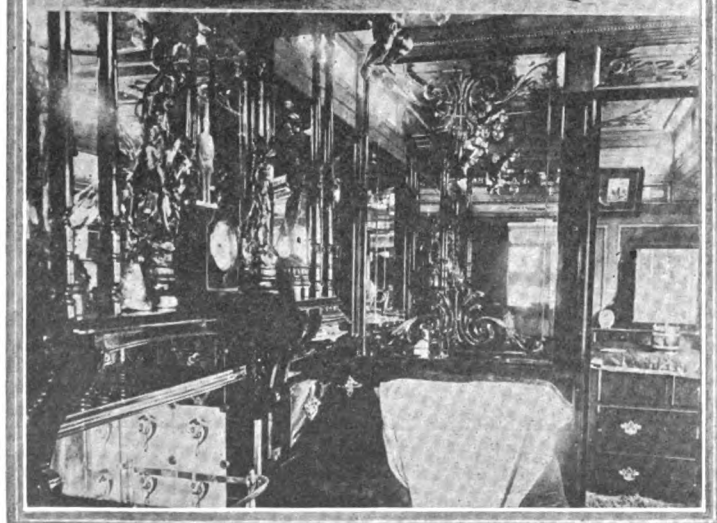
The "Summer Train" Shown at the Right Is a New Development That Has Been Put in Use on Short Line Railroads. The engine is a motor truck mounted on railroad wheels and attains a speed of forty miles an hour.

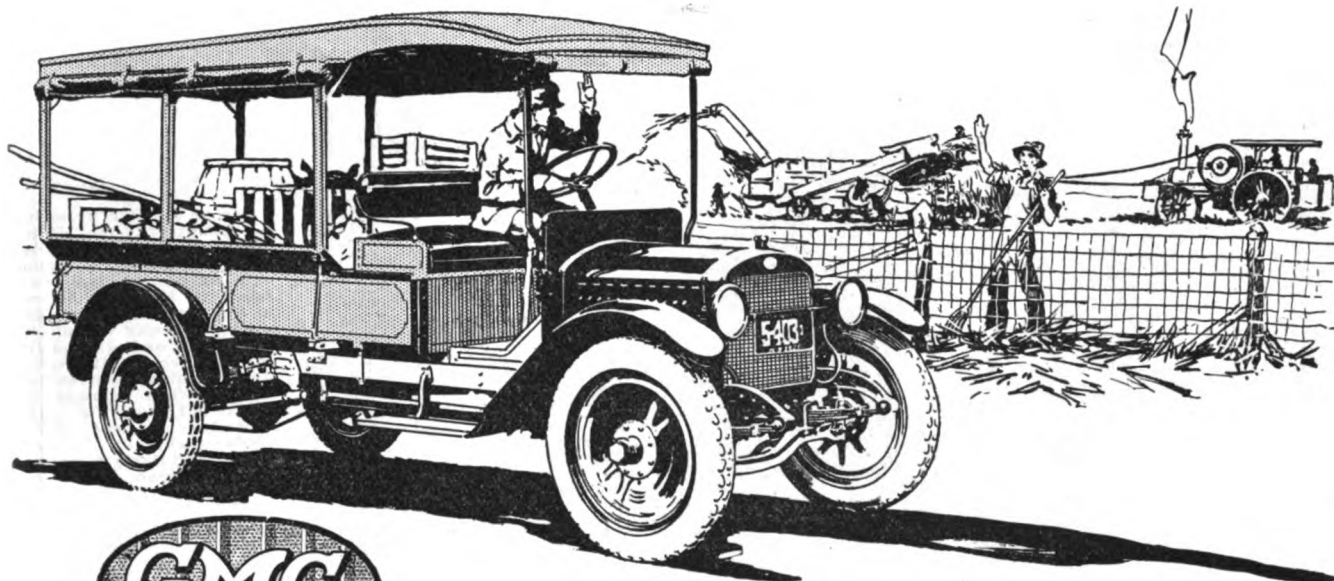


The Bus Shown Above Is a Most Luxurious Vehicle That Runs Between Minneapolis and Rochester, Minn. It really is a series of four limousine bodies mounted on a huge truck chassis. Each compartment is separated from another by a glass partition, giving a privacy that is not found in most busses.

One of the Most Elaborately Equipped Motor Trucks in Operation Today Is That Used as Living Quarters by T. Murphy, Traveling Showman of London, England. Mounted on this chassis is a van body of special construction which is divided into two rooms that are completely furnished, one for a bedroom and the other for a living room. Among the other furnishings, the living room contains a piano and a small cook stove.

In the Construction of the Body of Mr. Murphy's Traveling Van Much Solid Mahogany Is Used and the Interior Is Elegantly Finished. The cost of the body alone was over 2,000 pounds or approximately \$8,000 in United States currency at the present rate of exchange.





A "Jim-Dandy" Truck
Model K-16 One Ton

\$1295

Chassis Only—At the Factory

"It's a Truck All Through"

Built entirely of truck parts, fast, staunch and enduring, the Model K-16 One Ton GMC truck is always ready to travel.

Every unit in it is of extra size and is designed for truck use only. That is why it lasts indefinitely under the hardest usage.

That is what makes it a "Jim Dandy" for the farm. It has the ruggedness, the power and the simplicity that makes it deliver more continuous haulage than other trucks over the roughest roads and under the severest hauling conditions.

This GMC has a number of exclusive improvements that both increase its operating efficiency and reduce the time and expense of maintenance. Such features as Removable Cylinder Walls, Pressure Lubrication, Removable Valve Lifter Assemblies and Instantaneous Governor Action help to produce a new and better kind of motor truck operation.

It has radius rods—recognized as essential to enduring truck construction—which take the driving thrust and absolutely keep the brake adjustment fixed whether the truck is loaded or empty. It has magneto ignition, recognized as the simplest, most reliable type.

It has both pump and thermo-syphon cooling. It has electric lights and starting equipment—separate from the ignition and wired in metal conduits. It has pressure chassis lubrication, demountable rims, cord tires and every other refinement essential to a high grade, dependable motor truck.

Write for an illustrated booklet "Motor Trucks On the Farm."

GENERAL MOTORS TRUCK COMPANY—Pontiac, Mich.

Division of General Motors Corporation

Dealers and Service in Most Communities

GMC Chassis list at factory as follows: One Ton, \$1295; Two Ton, \$2375; Three and One-half Ton, \$3600; Five Ton, \$3950; tax to be added

General Motors Trucks

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS



One of the Odd Trees in the Country Is the White Birch Shown in the Photo at Bethlehem, N. H. Years ago when this tree was small it found a fissure in the rock and gradually worked its way up into it and finally, as it grew, split the rock open. It clearly demonstrates the power of nature when allowed to work out its own path. The tree is now about twelve inches in diameter, strong and likely to endure for many years.

The Bamboo Groves at Anderson, S. C., Are Noted Thruout the South. The bamboo grows at the average rate of a foot a day, and in thirty or forty days attains its full growth. Some canes have reached a height of over forty feet, a circumference of eighteen inches and a hundred and fifty pounds in weight. Rufus Fant, of Anderson, S. C., is shown here in the bamboo grove he owns. The rapidity and surety of growth is a great inducement to farmers for beginning bamboo groves.



Above Is Shown the Joys That May Be Gained from Planting the Farmyard with Flowering Shrubs. This picture was taken on an Indiana farm and shows mother and the children enjoying the flowers that appear every year.

The Work of the Month

SEPTEMBER finds practically all the crops of the year harvested. By the end of the month the silos will be filled; the grain in the bins and the root crops stored away for the winter or hauled to market.



WHAT has been the experience of the year? Crops have been good; considerably better than a year ago. With the exception of wheat and corn of which there is a decrease, all farm crops were greater, especially cotton, of which, it is estimated, there will be 3,000,000 more bales than in 1921.



NOW, while the season's operations are fresh in mind is a good time to take stock. Has the production per acre on your farm been greater, thereby cutting down the cost per unit? What were the mistakes made, and how can they be avoided another year? These are questions that may be profitably considered, and remembered, for the answers to them will be a great help next season.



FALL pigs are due to arrive this month, if the sows were bred at the best time. Look well to the farrowing pens, feed the sow carefully just before farrowing and for two or three weeks afterward. Give her clean quarters, and provide the pens with guards so that the young pigs will have a chance to escape being crushed by the lumbering mother.



IF the weather is wet don't forget to turn the windrows of the red clover that is cut for seed. Allowing the clover to remain wet sprouts and spoils the seed.



STATE and county fairs are in full swing now. They are not only entertaining but educational. It gives us a chance to see what our neighbors have produced, and ourselves an opportunity to show prize products from our farms. Instead of the old-fashioned congregation of cheap shows and catch penny devices, the modern fair has become just what it was intended to be—an agricultural exhibition, a place where good wholesome amusement, and interesting exhibits may be found.



A NEW year at the state agricultural colleges opens this month, and thousands of boys and girls, graduates of the rural and town high schools, will begin the courses that will fit them to become real farmers and farm home makers. The investment in a college course is considerable, but in the years to come it will return the principal with a rate of interest that even is beyond the imagination of the fake stock

salesmen. Later in the fall and winter there will be short courses. Plan to send the boys and girls to college if possible, but to the short courses at any rate.



IT will not be long before winter will set in. It looks as tho coal would be scarce and perhaps costly. A good supply of wood stored near the house is a wise precaution against a shortage of the ordinary fuel supply. Any surplus will bring a higher price than usual this fall and winter. A day with a buzz or drag saw will yield as much wood as many days hard work by hand.



FALL plowing is crop insurance. Also it is an effective way to control insect pests. Land turned over in the fall may be made ready for planting in the spring by disc or harrow and a better seed bed will be obtained. Fall plowing exposes the grubs that have gone into winter quarters to the air and sun, which means death to them at this season of the year.



NEXT year's farm income tax will be simplified by the use of farm account books. Your county agent has 'em.



Fall Plowing Turns Up the Grubs of the Enemies of the Crops, and the Sun Puts an End to Them. Besides a better seed bed can be secured when spring planting time comes.

Certified Electric Service



Why Not Now?

You and your family want to enjoy all the good things that the city family enjoys, but a taste of city life is more apt than not to confirm your conviction that, life on the farm makes for greater happiness.

You have your automobile—your tractor—your modern equipped barns and necessary farm machinery to do your work easily and quickly but unless you provide the advantages of electricity you are missing the most needed development available to the American farmer today. Sooner or later you are going to realize its vital importance.

WILLYS LIGHT Certified Electric Service is now available—the same dependable, electric light and power facilities your city neighbor enjoys. With it you can forever discard the fussy, mussy, dangerous oil lamps and lanterns. You can provide at the touch of a button, bright, white, steady light for every room in the home, in the barns and out-buildings and in the yards.

And, as important as bright cheery lights, WILLYS LIGHT Certified Electric Service provides power which lightens the labors of mother. She can iron in a cool room with an electrically heated iron. She can have an electric washer and save untold time and drudgery. She can have running water in kitchen and bathroom. It can be used for cleaning, churning and separating, running milking machines, turning grindstones and other farm machinery.

Why not investigate WILLYS LIGHT Certified Electric Service now? There's a painstaking, conscientious WILLYS LIGHT dealer-expert near you who will give you a demonstration on your farm without obligation and Free estimate of equipment and installation suited to your requirements. The cost is amazingly low and easy terms of payment can be arranged to suit you.

Write today for illustrated catalog of full particulars. Address Dept. 903.

See Willys Light Certified Electric Service
at your State and County Fair

WILLYS LIGHT DIVISION

The Electric Auto-Lite Company, Toledo, Ohio

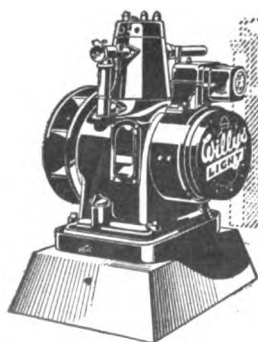
Builders of over 3,000,000 electric lighting systems



Any woman can get a big day's washing finished way before noon by using a power washer operated with WILLYS LIGHT Certified Electric Service.



WILLYS LIGHT Certified Electric Service provides clear, pure water continuously for the stock without any labor or wasting a minute of your time.



\$295
and Up

There is a size to fit your needs
—as much or as little power as
you may require and terms of
payment you can afford.

WILLYS LIGHT

Power and Light with the Quiet Knight

AS IT SEEMS TO US

15,000 "Iron Horses" in Wisconsin

"THAT the tractor is here to stay is no longer a question for argument. About 15,000 of these 'iron horses' are at present serving the farmers of the State of Wisconsin," estimates F. W. Duffee of the University of Wisconsin department of agricultural engineering.

"Surely the best indication of the worth of a machine is the extent to which it is used. A survey conducted by the federal Department of Agriculture of 286 farms in Ohio, Indiana and Illinois shows that a three-plow tractor will do as much work in a day as 8.3 horses. Tho one should not expect results like these on every farm they do show that the tractor is a paying proposition on a farm of sufficient size to warrant its use.

"It is generally estimated that the cost of running a tractor is about the same as that of keeping the horses which it will replace," declares Mr. Duffee. "This is an advantage in that more work can be done in a day at the same cost for which it could be done with horses. Work can also be done that could hardly be done with horses such as plowing in late fall or even cutting grain in very hot weather. The tractor has become more and more fool proof until today even the most inexperienced operator can rely upon his 'iron horse' to do the work cut out for it.

"Power farming is no longer an experiment," Duffee says. "It has passed thru the stage of infancy and has proved its value. This does not mean, however, that improvements on tractors and power machines have ceased. As time goes on the various types will become more and more standardized and efficient until a tractor will be considered as great a farm necessity as a grain binder is today.

"Even now the farmers are constantly alert to the results obtained by users of the various types and makes of tractors. Farm power machinery is at present undergoing a process of selection. The poorer machines are being weeded out and the better ones are coming to the front. This probably will continue until only those machines which will give the best results will remain on the market."

Tractor Used to Move Haycocks

IN the Ambala district of India during the farm harvesting season the demand for transport and labor exceeds the supply. It was with this point in view that during November of last year experiments were conducted in drawing hay in cocks to the stack or hay press by means of tractors. The experiments, according to reports received by the Agricultural Implement Division of the Department of Commerce,

were quite successful, and the new method was found to be much ~~more~~ economical than the old system ~~of~~ transporting hay from the cocks to the stack by means of bullock carts. The tractor is fitted with a long chain. This chain is pulled round a cock of hay, and both ends of the chain are attached to the drawbar of the tractor. The chain is lifted about one foot from the ground and the tractor set in motion. The chain gradually tightens on the hay until the whole cock moves off, sliding over the ground on its own base. The speed varied according to the load, but cocks of from 4,000 to 5,000 pounds can be pulled at a fair walking pace. The system, besides being economical, is a labor-saving device, as one tractor with three



This Simple but Most Useful Farm Sign Is Made of Painted Sheet Iron, with Wood Frame, Mounted on a Post.

men takes the place of at least 15 carts with 15 men.

CONCRETE tile have given as good service as clay tile if well made and set below the frost line. The exception to this statement is in the case of soils which are very acid, such as peat. The Wisconsin Station found that in peaty soils the soil acids attacked the cement so that it gradually crumbled.

SPREADING lime is no pleasant job, especially on a windy day and when the burned forms are used. Some men have found, says H. R. Cox, extension specialist in agronomy of the New Jersey Agricultural College, that tacking canvas or burlap entirely around the lower edge of the spreader and letting it hang almost to the ground, greatly lessens the discomfort to man and horse.

THE methods aren't the same, but one works as well as the other—culling hens and culling cows.

Bottom Drops Out of Wheat Field

Nature Performs Extraordinary Feat on Farm Near Bland, Missouri

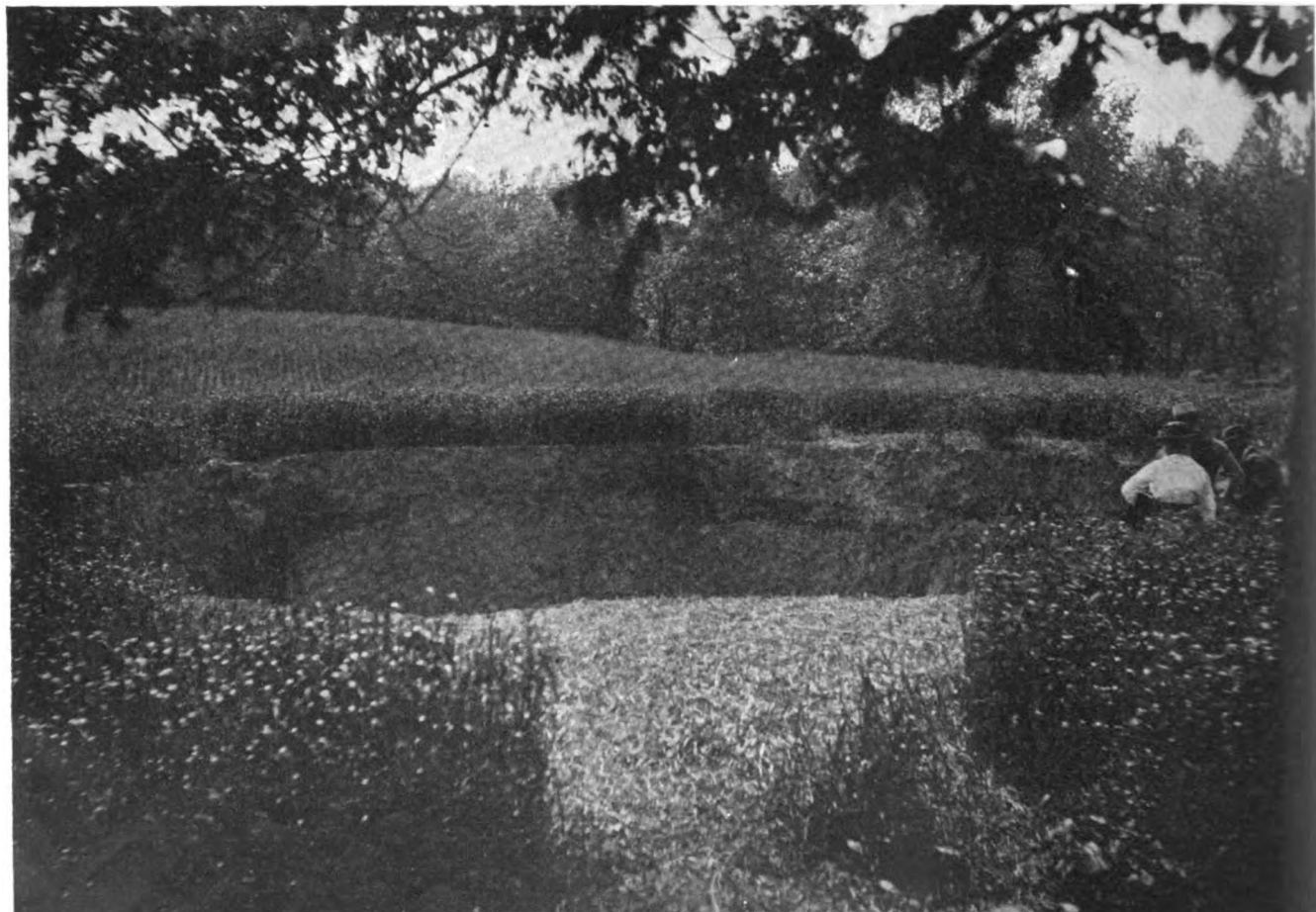
By ROBERT H. MOULTON

WE have frequently heard of the bottom dropping out of the wheat market, but instances where the bottom has dropped out of a wheat field are comparatively rare. This, however, is exactly what happened on the farm of J. G. Gleize, near Bland, Mo., a short time ago. At noon one day Mr. Gleize stopped the tractor with which he had been plowing, climbed the fence of that field into a field of growing wheat and followed his usual path thru the wheat to home and dinner.

It was 1 o'clock when he started back to the tractor, and as he retraced his steps across the wheat field, and neared the lower end, he found an amazing thing. Directly in front of him, the ground he had walked upon but an hour before was gone. In its place was a great chasm. The hole was almost round, and so deep that Mr. Gleize could only see the bottom by climbing to the very edge and looking down. Even then, all that he saw was a dark opening where the bottom should have been. Beyond the opening, im-

penetrable darkness. The steeply-sloping sides were not littered with uprooted wheat nor any other debris, nor were they jagged in appearance. It was almost as tho a gigantic paring knife had been at work, in the hands of an expert.

According to Mr. Gleize, there was no water at the bottom of the sink hole when he first looked down into it. A few hours later, however, the bottom had filled with muddy water, covered with a black scum. The water afterwards cleared and then became muddy again. Measurements made later in the week showed the hole to be 70 feet in diameter, while the distance from the surface of the ground to the water was 112 feet, and the water itself had an additional depth of 114 feet. After the first sinking of the ground, which occurred on a Monday, the surface opening was almost circular except for a large clump of earth held by the roots of a 20-year-old apple tree standing some 7 or 8 feet away from the rim. On the following Friday the tree was still there, but the next morning it had



View of the Cavern on the Missouri Farm of J. G. Gleize. A hole 70 feet in diameter and 114 feet deep was made by nature between morning and noon.

vanished, a patch of fresh-looking dirt on the side of the cave-in showing where the tree and its roots had been detached. The pool below did not show a twig projecting above the water, nor so much as a leaf floating on the surface.

Since the cave-in occurred several additional segments of earth have dropped out of sight, mostly from the lower portions of the sides, which at the present time are straight up and down in places and are rapidly approaching that condition elsewhere. The bottom is about three times larger now than it was on the first day, and it is all water, too, altho a few ledges of rock on one side offer a precarious foothold for anybody who might be so unfortunate as to tumble in. Several young men of the neighborhood who have descended on rope ladders to the bottom of the pit report that both the water and air down there are very cold. But there is no apparent entrance or exit for the water around the edges of the hole, a fact which is puzzling not only to the residents of the district but to scientists who have visited the scene.

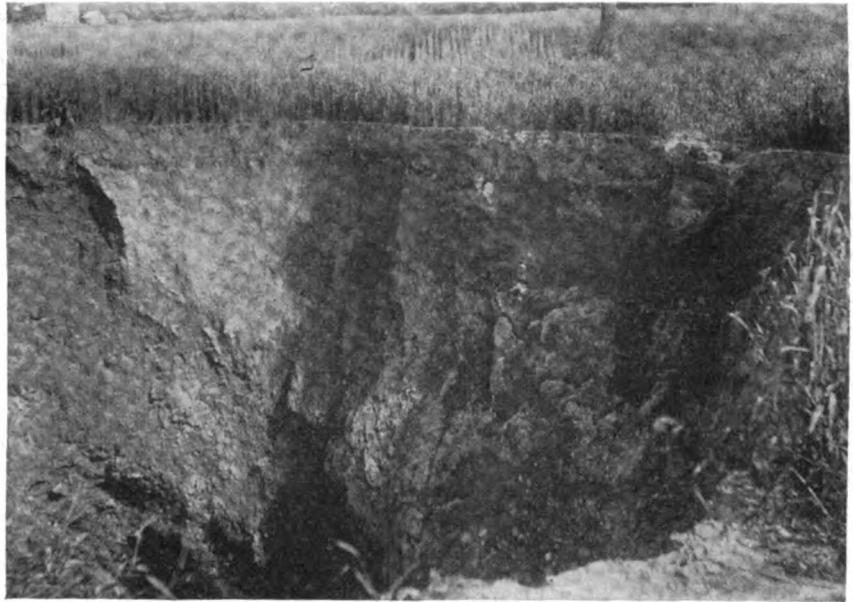


Which Barberry is Harmful

“AS A result of the publicity given the barberry eradication campaign in South Dakota,” says Lynn D. Hutton, of the South Dakota College of Agriculture, “many people thru their interest in the work have dug up a number of harmless and beautiful ornamental hedges believing them to be barberry. In a great many instances the Japanese barberry which is harmless has been dug and people have been put to the expense of replacing these hedges. In order that you may know whether the bushes on your place are the harmless barberry the following description of the several kinds of barberries are given.

“The common barberry is a tall, erect shrub, often 8 to 12 feet in height, with grayish bark. The branches bear spines, usually in groups of three or more. The leaves are green or purple and have saw tooth edges. The yellowish flowers and red berries are in long dropping clusters like those of currants. It is harmful. It spreads rust. Destroy it.

“The Japanese barberry is a low, gracefully spreading shrub usually 2 to 3 feet tall, with reddish bark. The spines are small and usually single. The edges of the leaves have no teeth. The flowers are yellow and the berries are red but the flowers and berries occur singly or in small bunches of two or three, like gooseberries. This bush is harmless. It does not rust. Do not destroy it. Plant it if desired.”



Looking Down Into the Cavern on the Gleize Farm.

Wheat Smut Serious

MORE stinking smut was found in the wheat this year than ever before. Many fields were smutted as high as 25 per cent and several from there on up to 85 per cent. Farmers cannot afford to omit treating their seed wheat this fall. They can make their time worth several dollars an hour by doing a careful job of treating. The Nebraska State Agricultural College recommends the floating and skimming method as the best one to use since this removes the smut balls which might re-infect the wheat treated by other methods.

Many farmers are using the sprinkling method and find that it does not get rid of the smut. This method should not be used on wheat, unless one is absolutely certain that there are no smut balls present. To find out if they are present a small quantity of the wheat may be poured into a tub of water and stirred. If the smut balls are present they will come to the surface. Even if only a few are present the floating or soaking method should be used.



DAIRYMEN in the 45 cow-testing associations in the nine Western States now own 9,484 cows that have made more than 40 pounds of butter fat in a month. Not many years ago a 40-pound cow was a rarity. There is much room for improvement, however, in the general run of herds in all parts of the country, says the United States Department of Agriculture.



WHEN saving the ears of corn for seed, set aside twice or three times as much as will be needed next season. In case of a crop failure, or at least should the corn be not the best for seed, there will be a supply on hand.

What the Farm Boy Learns to do

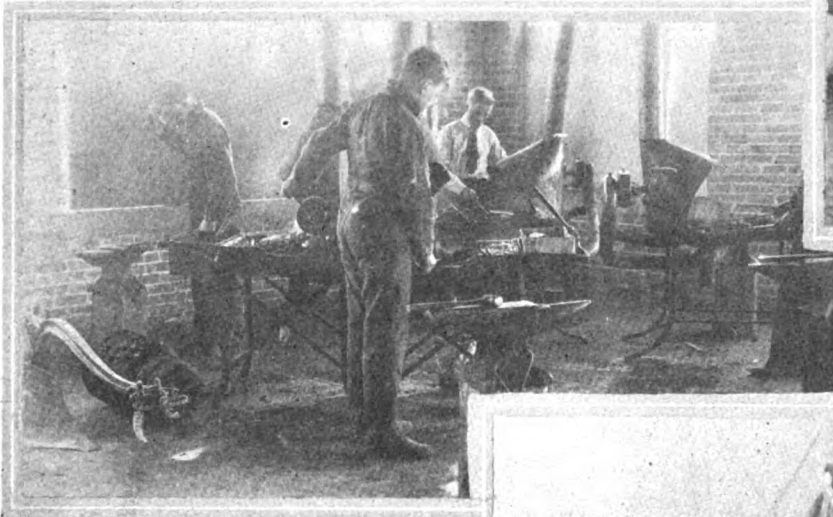


Plows Must Be Shaped and Pointed. That's another of the things the boys learn in the blacksmith shop of the agricultural high school.

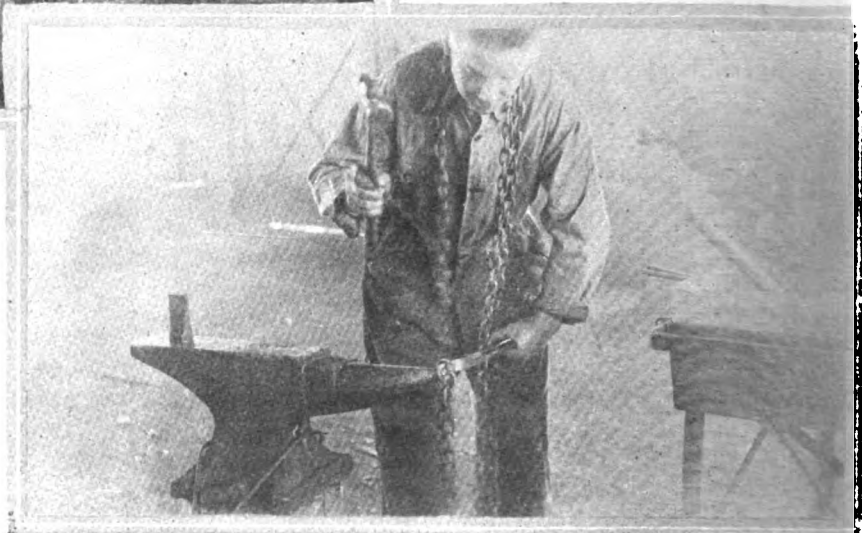
There Is an Art in Being Able to Sharpen and Temper a Chisel. Here is a farm boy learning how to do it.



Welding a Chain Is Another Frequent Job on the Farm. When this boy finishes his course in high school he will know how.



Scene in the Blacksmith Shop of the South Cache High School, Where the Boys Learn All Sorts of Work Under the Direction of E. Perry Van Leuven, Head of the Manual Training Department.



at the Agricultural High School

Soldering Frequently is Necessary, Especially on the Dairy Farm, and It Is Not Necessary to Haul the Utensils Into the Village Tin Shop When Someone About the Place Knows How to Solder. At the right is a scene in the South Cache High School tin shop, the members of the class being at work repairing pails, cans and pans gathered from home and the neighbors.



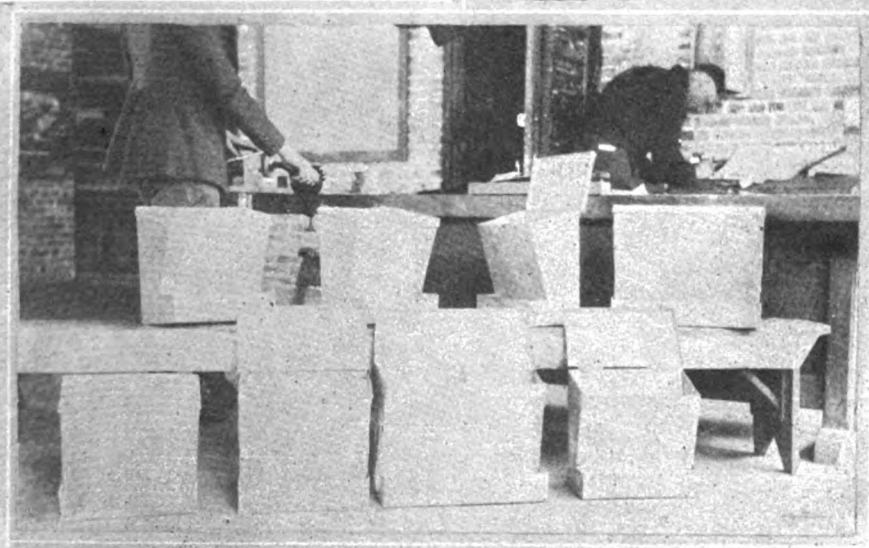
At the Left Is One Day's Collection of Tinware, Which the Boys Have Repaired and Made Ready to Be Returned to Their Owners. This method makes the work practical as well as instructive, a fact that farmers appreciate.



At the Right the Boys Are Soldering Milk Cans and Doing Good Work. Practice such as this makes them capable of taking care of their own cans.



At the Left the Two Boys are Making Metal Hoppers for the Poultry Houses and Yards.



New Plow to Reclaim Marsh Land

Huge Rolling Coulter Rolls Under Trash, While Pusher Turns Furrow Completely Over, Killing Sod

By WELLINGTON BROTHERS

A GIANT 30-inch rolling coulter will make it possible to plow the 75,000,000 acres of marsh land in the United States, believe its designers. This great coulter will effectively roll under the trash and cut the toughest sod, and it is only a question of time before the vast area of marsh land in this country will be reclaimed thru its work. The reclamation of this waste land means a great deal to the country, to the owner of the small farm with just a small acreage in marsh land and to the owner of a section of land that is entirely marshy, for this huge coulter will make this waste land suitable to almost all kinds of farming.

This largest rolling coulter ever made has just been perfected, it is the result of the tractor marsh plowing demonstration carried on at Madison, Wisconsin, by the college of agriculture. It was designed by C. P. Carlson. Mr. Carlson is prominent among the foremost plow designers in the United States. The plow on which this giant coulter is used is of new design and has three features, some of which were suggested by F. W. Duffee, of the agricultural engineering department of the University of Wisconsin. Mr. Duffee's suggestions were the result of many trials and experiments conducted on the reclaimed university marsh, where many of the problems of marsh plowing and cultivating have been overcome.

The first of these features is the giant rolling coulter, 30 inches in diameter and made of very heavy chilled steel. It grew out of the demand for some way of rolling the trash under, as with the old type

coulters and standing duck bill cutters the trash was merely pushed along ahead of the plow. Simple mechanism allows the giant coulter to be set to the bottom of the furrow, while its great size and weight does the rest.

The second feature is that this new plow is a sulky plow, heavy and strong in construction and has a power lift. The construction thruout the entire plow is very strong and simple.

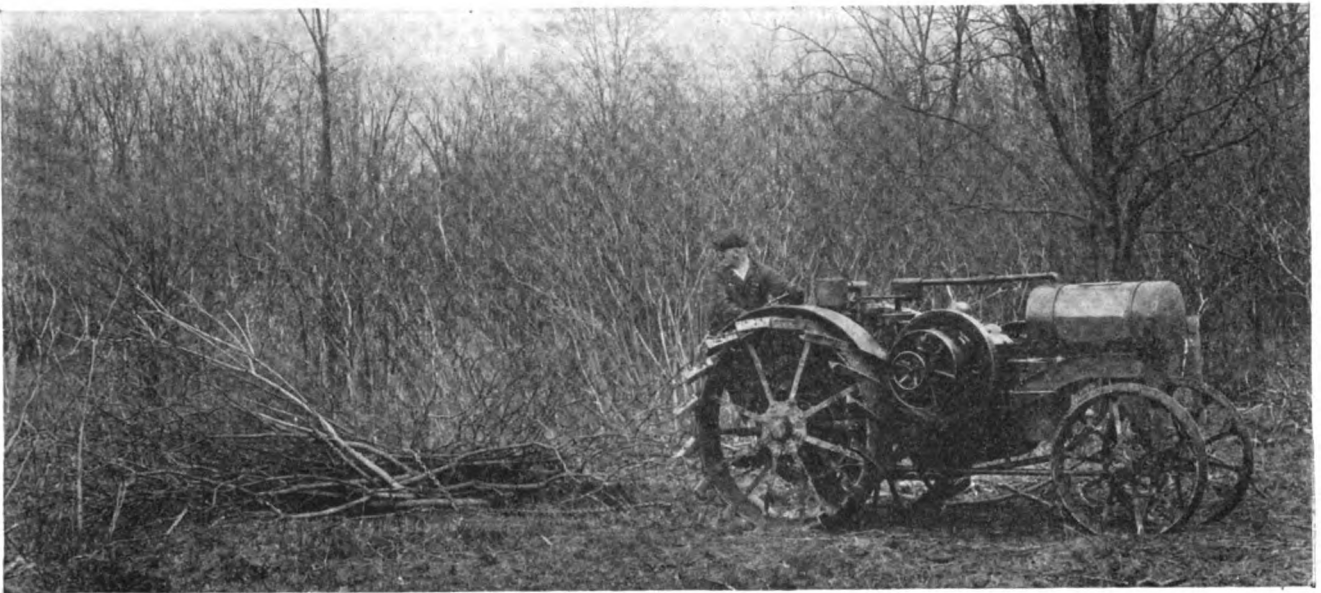
The third feature is the furrow pusher. It is located in the rear of the plow and is a long moulded piece of chilled steel. This pusher allows for the turning of the furrow slice upside down, and lays it down flat so that no grass sticks up to grow in between the furrows. With the old type plows the furrow slices did not lie flat and some of the sod always remained on top and grew. By laying the furrow slice absolutely flat the capilarity of the soil is not broken. This is important in connection with the amount of water in the soil.

This new plow is very light in draft, being about 30 per cent lighter in this respect than any previous plows designed for marsh use with tractors. Everything points to its success and wide use on the marsh lands of Wisconsin and the United States, Mr. Duffee declares.

The problem of marsh plowing in the United States is a very great one, due to the great number of acres of this kind of land and the increasing need for more land which is suitable to agriculture. In the United States there are about 75,000,000 acres of marsh



A New Plow That Has Proved Successful in Breaking Marsh Land.



Using the Tractor to Haul Away Brush on Land That Is to Be Cleaned and Then Broken.

land, and in Wisconsin alone at the present time there are over 2,000,000 acres. According to Professor E. R. Jones, of the agricultural engineering department of the University of Wisconsin, there are about 700,000 acres of marsh land in the State of Wisconsin which already are equipped with outlet ditches, and which soon will also be equipped with drainage tiles. These figures show the great need for some method of plowing which will enable the farmer to use this large acreage. This new plow with the giant rolling coulter, Mr. Duffee believes, will solve the problem for all time.

Marsh soil is generally a typical muck or a slight variation from it and the same conditions are to be found on them all. Before the soil has ever been worked or cropped it is usually covered with a very tough sod. This sod is very rough and hard to plow. Deep plowing is necessary because the marsh land is so rough and boggy. This necessitates the use of a large plow. When an ordinary plow is used the furrow slice will roll back into the furrow instead of being turned completely over.

After the land has been cropped for two or three years the soil becomes "fluffy," very loose and light. This is because the sod has become well rotted. A mouldboard plow will not scour in this type of soil, and the trash, old corn stalks and the like, will push along in front of the plow for several feet, instead of being rolled under. The plow will merely push the soil to one side instead of plowing it under.

The tough sod of the unworked marsh and the fluffy soil of the worked marsh offer two problems to the plow designer. The type of plow which has proved the most satisfactory in the past on the sod is the large brush breaker, ranging in size from the 20 to 24 inches. It cuts a wide furrow of from 7 to 10 inches deep and does very good work on the bogs, turning the furrow slice completely over, and cover-

ing all of the trash. The substitution of a large rolling coulter instead of a standing duck bill cutter overcomes the difficulty of clogging where the grass is extremely tall and thick. The plows which give the best results are of the walking plow type, with a carriage under the front end of the beam provided with levers for lifting the plow out of the ground.

On stubble land the disc plow is the only type which will handle the soil after the sod has started to rot. The common practice is to plow the land the first year, and to merely disc it the second year, allowing the sod to remain undisturbed.



Worms in Swine Cause Many Ills

WITH fully half of the ailments to which pigs are heir attributed to worms, all who raise even one or two porkers will be interested in the preventive measures suggested by the animal husbandry workers at the New York State College of Agriculture.

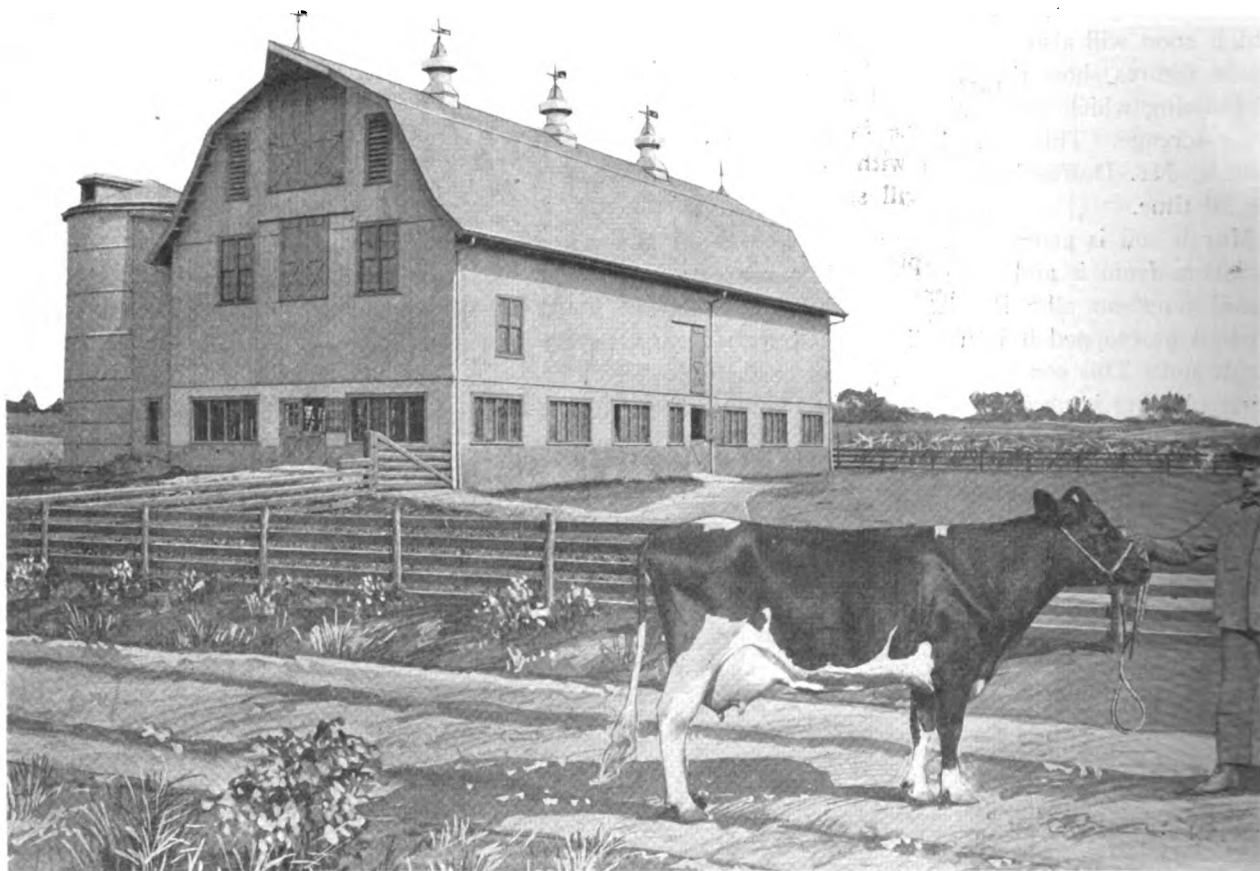
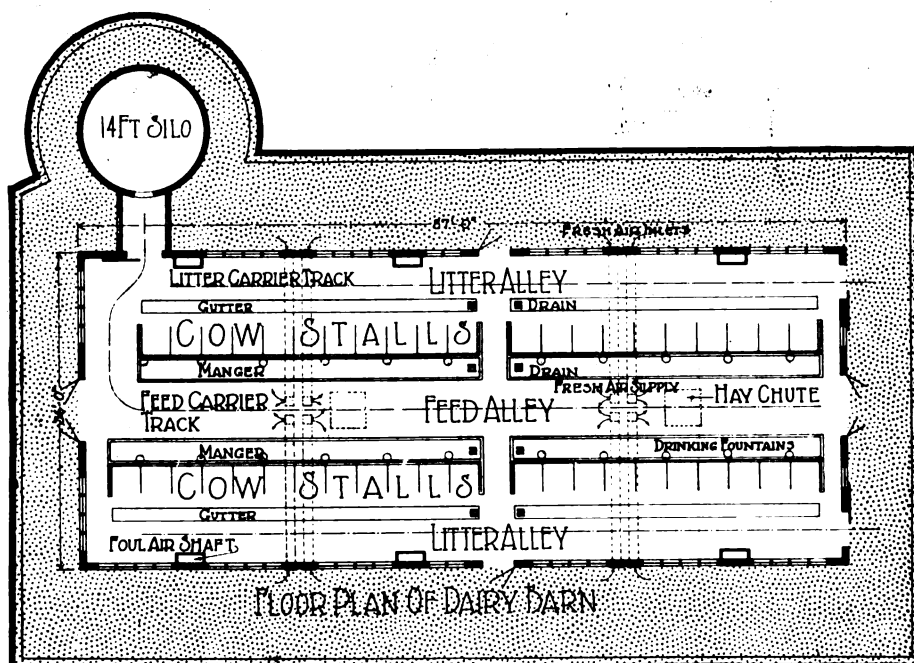
Nearly all hogs have worms, especially during the early period of their lives. They usually become infested during the suckling and weaning period, and the ravages generally decrease as the hogs become older.

Sanitary premises, a liberal use of common disinfectants, and keeping the hogs in a thrifty condition are said to be among the very best preventives. It is also suggested that the following mineral mixture be kept before the hogs at all times: Thirty pounds charcoal, 10 pounds ground limestone, 10 pounds salt, 1 pound sulphur and 1 pound copper sulphate.



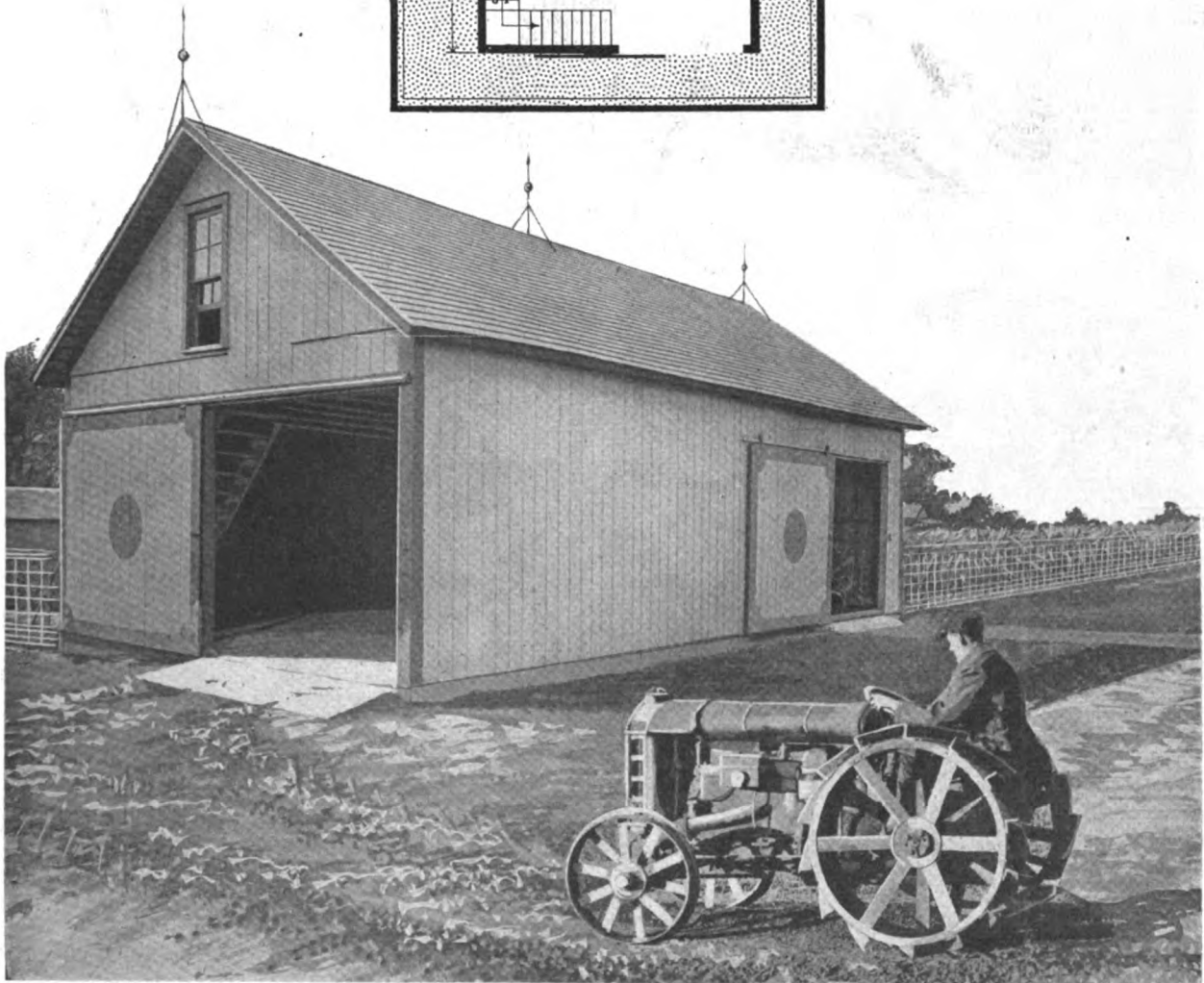
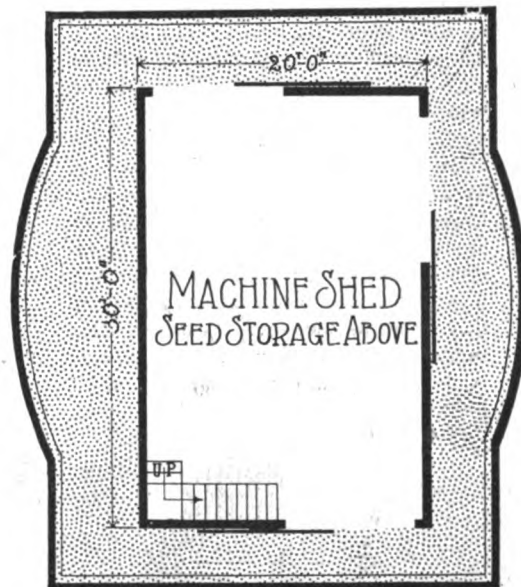
ONE item of diet that means good health is fruit. The more that can be stored for use in the winter the less it will be necessary to spend for tropical fruits later.

FARM MECHANICS BUILDING DESIGNS



MODERN GAMBREL-ROOF DAIRY BARN. Besides being designed and constructed so that the modern, labor-saving barn equipment may be installed, one of the many good features of this dairy barn is its attractive appearance. The concrete foundation extends up to the ceiling of the ground floor stable, while above the building is of plank frame construction. The size, 36 by 87 feet, permits the installation of 40 stalls, arranged so that the work of caring for the animals can be done easily. There is shown on the plan an overhead feed carrier, as well as mangers and drinking cups. Good ventilation is provided by the fresh air intakes and the foul air chutes leading to the roof ventilators.

FARM MECHANICS BUILDING DESIGNS



GABLE-ROOF, FRAME MACHINERY SHED. Use of the tillage and harvesting machinery soon will be over for the season, and all need to be put under cover for winter and the stormy fall and spring weather. Here is shown an inexpensive type of machinery shed. It is of frame construction, 30 feet long and 20 feet wide and has a concrete floor. Overhead under the pitched roof is space for the storage of many of the smaller tools, while the ground floor will accommodate quite an array of machines. This is a farm building that soon pays for itself in the longer life it gives the farm equipment.

Tractors to the Rescue

Delays in Seed Bed Preparation Because of Late Spring Were Overcome This Year by Efficient Work of Power Equipment

TRACTOR enthusiasts have repeatedly claimed that tractors were especially well adapted for speeding up work on the farm in wet springs, thus overcoming serious delays and assuring full crops by proper and timely seed-bed preparation. This year was a banner year to substantiate this claim. The entire corn belt was veritably deluged. Operations everywhere were delayed. Planting time came and most farms were lakes of mud.

As delay piled on delay, farmers were alarmed. Most of them were from three to six weeks behind in their work. In numerous cases it looked like no crops

Here, for instance, is R. M. Gillespie, of Rockwood, Ill., who on May 14, because of continual rains literally became mired with his horses and faced the prospect of greatly curtailed crops. He made a quick and what might be called a last resort purchase of a tractor; then by day-and-night operation as Mr. Gillespie expresses it, "I got my land in the best shape I ever planted a crop." Here, also is Gust Peterson, of Oneida, Ill., who like a great many of his neighbors was a good two weeks behind this spring in his plowing. A new tractor made possible a crop for him. With this machine he plowed 40 acres in 18

was planted in time and the harvest was not delayed too much.

And right there we have the most influential factor affecting crop yields—timeliness in seed-bed preparation, planting, and harvesting. This has a greater influence on the farmer's profits than any other item. Control this one factor and you have taken a long step toward reducing the gambling element connected with farming.

But timeliness in performing the various operations is influenced by the weather—dry, hot weather delays fall plowing; late snows or heavy spring rains frequently prevent getting at the



Double Tandem Discs Following the Plowing Breaks Up the Clods of Wet Land and Helps to Pulverize the Soil So That a Good Seed Bed Is Secured.

or greatly decreased yields due to sheer inability to plant the seed. It was then that the tractor made its greatest appeal. Never in the history of power farming was there such a last-minute rush for tractors. Lowered prices, of course, stimulated the demand, but without a doubt, many a farmer bought a tractor simply because he had to in order to pull himself out of a very serious situation.

That the tractor accomplished its purpose and assured a crop, has been proven by a recent investigation carried on among farmers who had bought tractors this spring.

hours. "In turning out this amount of work in that length of time," says Mr. Peterson, "you sure do not stay behind in your work for any length of time."

That farming is the greatest gambling game in the world has become quite a commonplace saying. The farmer plants seed and then waits to see what will turn up. If the seed is good, the soil conditions right to germinate it, sufficient moisture falls to grow the crop, the weather is not too hot nor too cold, not excessively wet nor too dry, and no hail nor windstorms destroy the ripened crop, the return will probably be satisfactory—always provided that the seed

spring work when it should be done. Such was the case this spring. Conditions were so extremely adverse that inability to till and plant on time threatened disaster for many farmers. But the tractor played its trump card—its capacity to crowd the work intensively day and night, taking advantage of favorable breaks in the weather, doing in hours, work that ordinarily required days.

Joseph Mullikin, of Terre Haute, Ind., has this to say on this subject. "This spring," says Mr. Mullikin, "the rains retarded our plowing to such an extent that even though we had all our mules and

horses at work, we could not have finished in time to plant if it had not been for the tractor. We had the tractor equipped with a light and ran it day and night."

Now, when it comes to intensive effort either in summer when it is burning hot or in wet springs when pulling is the hardest, the tractor shows up at its best. What W. C. Behringer, of Wataga, Ill., another last-resort purchaser, has to say on this subject is particularly pertinent.

"We have a tractor," say Mr. Behringer, "and had 70 acres to plow and 110 acres to disk. Fifty acres of the plowing was heavy sod which had a big green growth on it and last year's hay crop on part of it. I tried it with six horses on a gang and believe me they had to pull and still the meat dropped off them without much being accomplished. With the tractor, I plowed 50 acres of heavy sod and 25 acres of old ground, double-disked 60 acres of old ground and 50 acres of sod in 12 days. The biggest plowing I did was 20 acres of old ground in one and a half days. Of course, maybe you won't call it a day from 6 A. M. till 8 P. M. and no dinner hour. I pushed with the lines with all my might, but still the old iron horse didn't get hot or tired."

S. J. Busha, of Buford, Ga., backs previous arguments on the efficiency of the tractor in wet spring weather as follows:

"Owing to conditions this year, with rain and moisture in the ground, we were very much behind with our plowing, and by the time we got into the fields, we had more plowing to do than we could have done with our teams. However, we had our tractor and by pushing this machine and working overtime, we did our plowing in half the time that it would have taken had we had to depend on teams. We believe that if we had not had our tractor we would not have been able to get in any crops at all on our grain land this year."

A properly prepared seed bed naturally will conserve moisture and therefore provides better crops. Mr. Busha drives this truth home in the following forceful words:

"Another thing that we observed this year was that on account of so much rain there was an unusually large crop of weeds and grass, and a tractor plow was the only way in which we could plow these under, and then, too, we now have a seed bed which will withstand a long dry spell, which we are almost sure to have after this rainy season."

An advantage of speeding up the spring work is brought out by J. W. Haynes of Senyay Dairy Farms, Asheville, N. C., as follows:

"The tractor enables us to devote so

much more time to the care and yearly test work of our pure-bred herd of Holsteins that we would not think of going back to horses and mules. We think that the tractor can be used anywhere for any purpose, much more economically than either horses or mules, and it adds new life to a dairy farm, and relieves such a farm of many of its unpleasant features."

Mr. Haynes also tells how at Senyay Farms, they were from 30 days to six weeks behind this year and how a tractor was used to speed up things. "We had accumulated 200 spreader loads of manure," says Mr. Haynes, "at our dairy barn on account of the wet weather and inability to drive over the land. With the tractor to operate the manure spreader, we easily did as much work in one day as we had formerly done with horses in six days and with greater ease. The manure was spread over a growing crop of crimson clover and rye, ranging in height from 20 inches for the clover to six feet for the rye. The traction cleats on the tractor, in pulling a double disk plow, cut the rye and clover in passing over it and gave us a much better seed bed. In short, we attached a smoothing harrow to the double-disk plow, and plowed, harrowed, compacted and made a perfect seed bed all in one operation. We completed planting earlier than usual; plowed in every nook and corner, including the garden, and at this time the corn crop has had three cultivations, and there is not a weed to be seen. We have sawed up our summer's wood, dragged the gravel road up to the present, and will use the tractor to harvest the silage corn and furnish the motive power to fill the silos.

"We are now keeping only one light team of combination horses for cultivation purposes, and these horses spend most of their time playing in the pasture."

Doesn't this statement by Mr. Haynes make one believe that on a tractor-operated farm the horse is getting a fair deal?



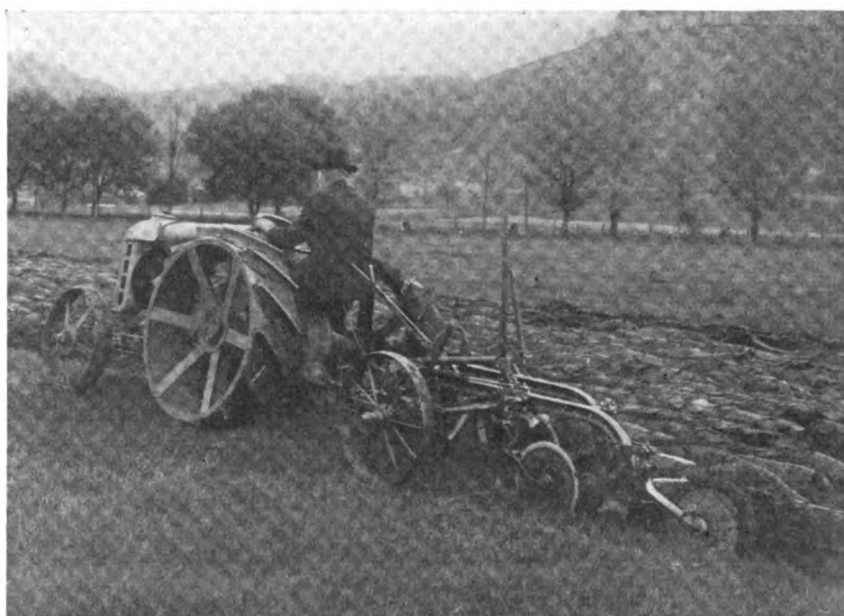
Trouble With Ropy Milk

ROPY or stringy milk presents an unattractive appearance, but so far as known is not injurious to health," says Horace M. Jones, extension dairy specialist at South Dakota State college. "A great deal of it occurs at this time of the year. The milk thickens upon standing for a few hours and may be drawn out in long threads. The milk may be entirely sweet and yet present this thick or viscous appearance.

"As is the case with most troubles of milk, this condition is caused by an organism, usually occurring in stale water. These bacteria may gain access to the milk thru rinsing the utensils in water from a tank, or they may adhere to the bodies of the cows as they wade thru stagnant pools and later drop into the milk pail.

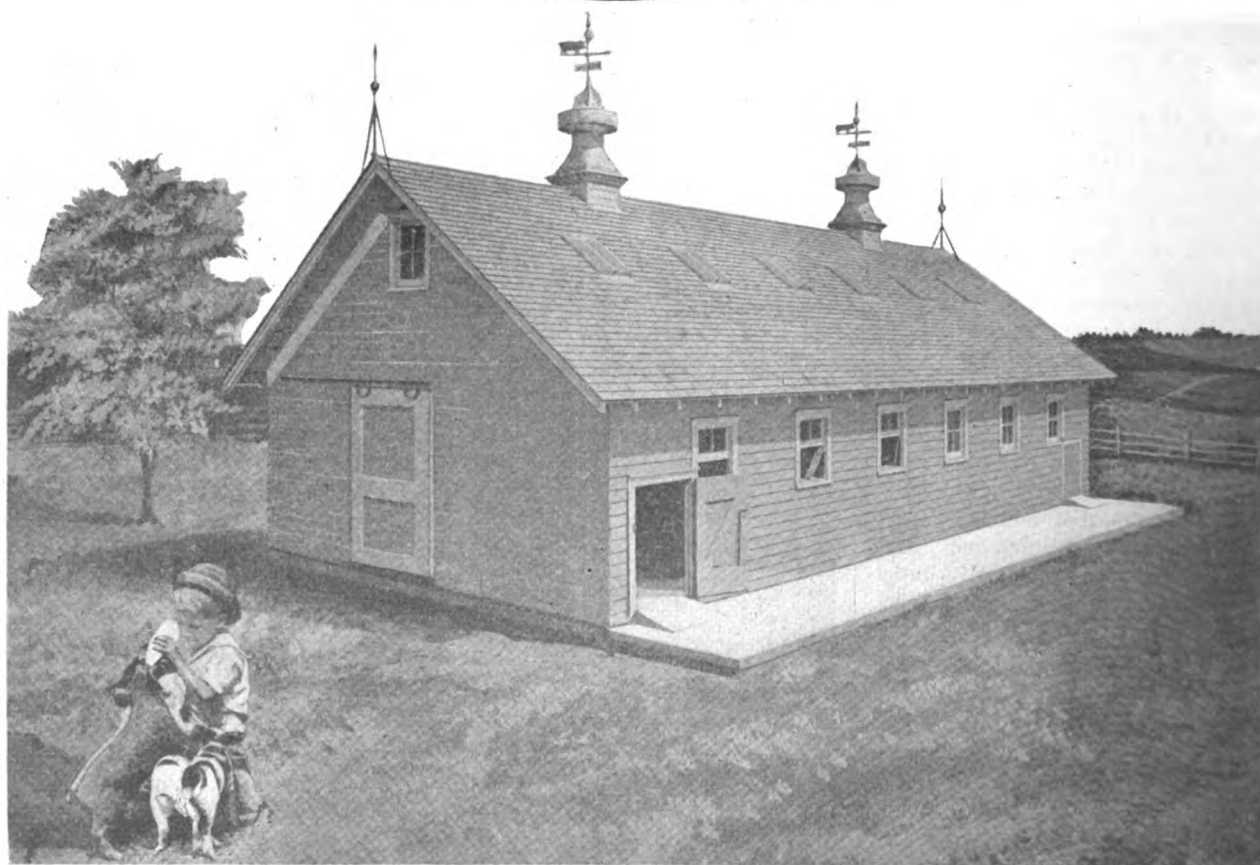
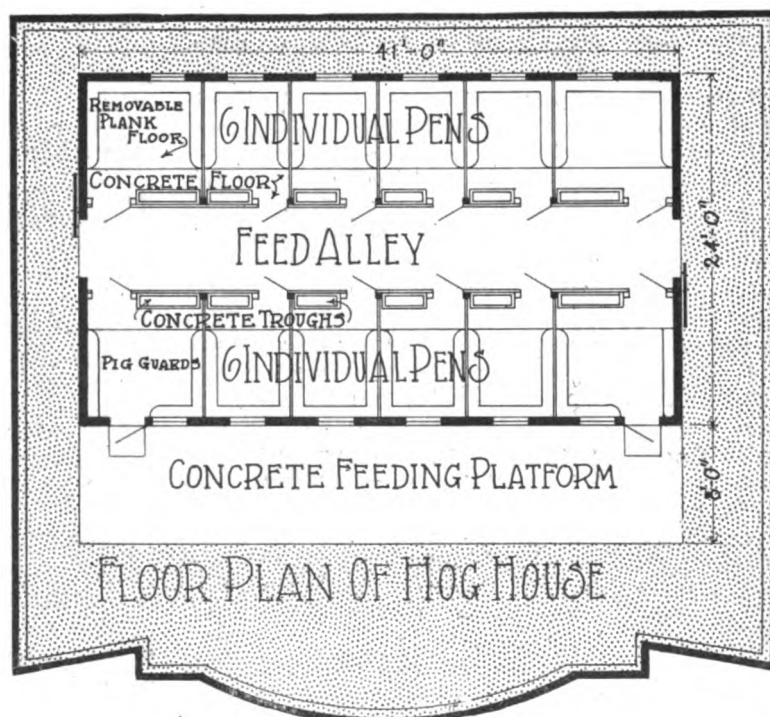
"There has been gross misunderstanding as to the cause of this malady. Some people have been known to dispose of certain cows in their herd thinking they were the source of the trouble.

"Rinsing the utensils with clean, fresh water and steaming, scalding or sunning them will prevent most of this trouble. Washing the cow's flanks and udder with a mild disinfectant before milking should eliminate the remainder of it."



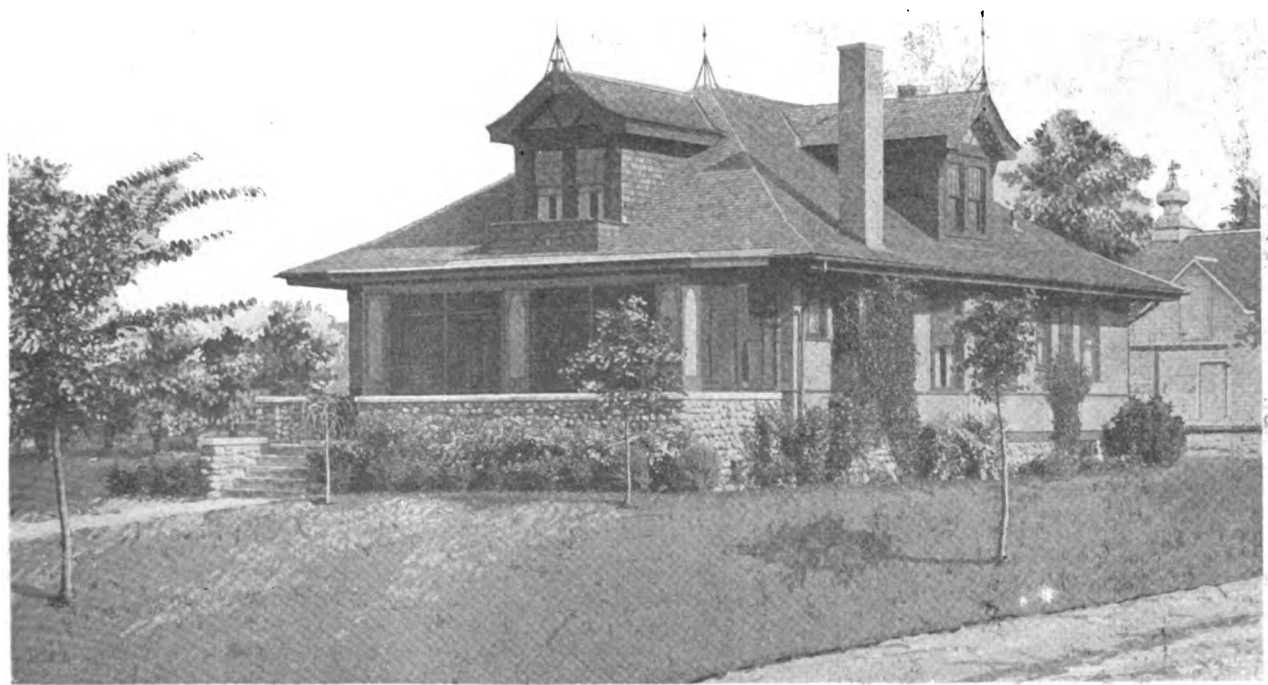
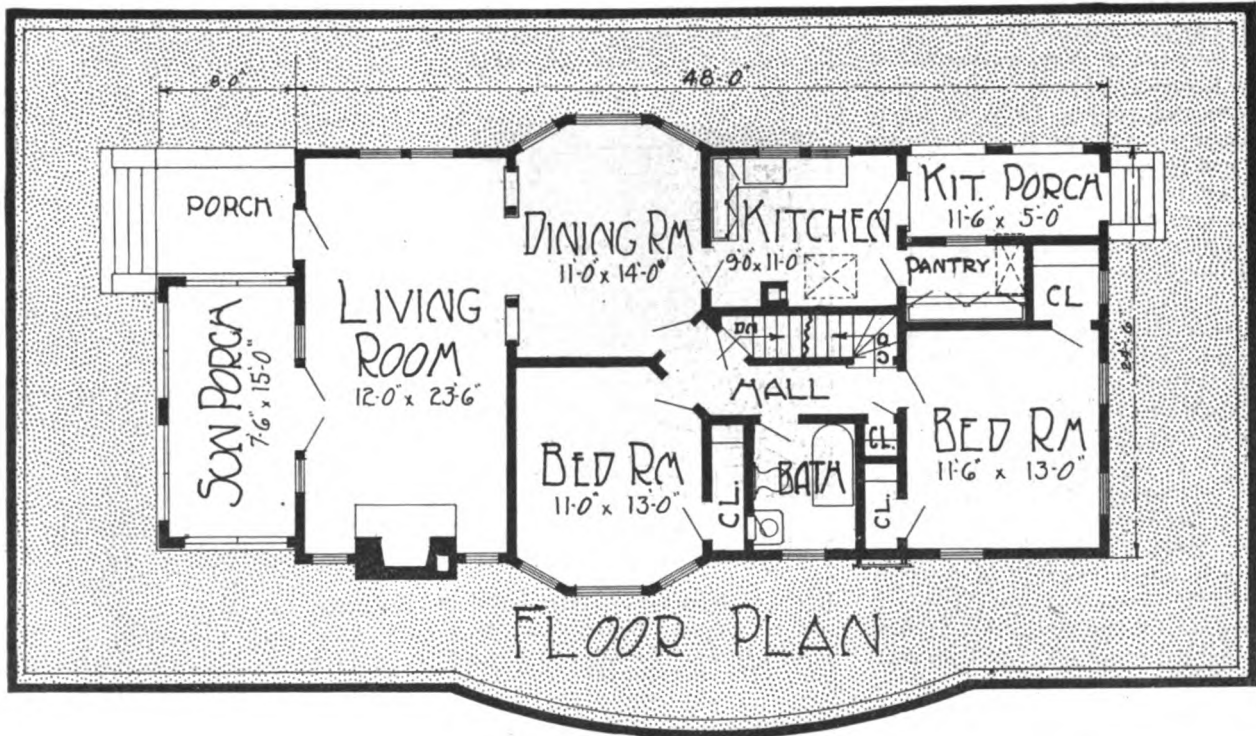
The Tractor Has the Power to Turn Over Sodded Clay Soil, or Any Other Heavy Soil

FARM MECHANICS BUILDING DESIGNS



SMALL, BUT EXCELLENT HOG HOUSE. Here is the sort of a hog house that every swine raiser can use to advantage. In the early spring it is a warm, weather-tight, well ventilated farrowing house. During the rest of the year, by removing the pen partitions, it may be used as a shelter and feeding floor. The house is 41 feet long and 24 feet wide and contains 12 pens. A feeding alley runs thru the center, so that the troughs may be filled or cleaned easily. Roof windows admit sunshine to all parts of the house, while suction ventilators keep the air circulating, which means healthier pigs and sows.

HOUSE BUILDING DESIGNS



STORY-AND-A-HALF FARM HOME. In appearance this farm home is hard to excel, as its wide porch, the dormer windows and pitch of the roof make it unusually attractive. While only plans for the first floor are shown, there is space on the second for two or more attractive bedrooms, which makes it capable of housing a good-sized family. The building is 24 feet, 6 inches wide, by 48 feet long, with an 8-foot projection for entrance porch and sun parlor at the front. Living room, dining room, and kitchen, and two bedrooms and bathroom are shown on the first floor plan.

What Do You Know of Batteries?

That Most Important Piece of Automobile, Truck or Tractor Equipment is a Mystery to Most Folks, But Here is a Light on the Subject

By C. H. SEAVER

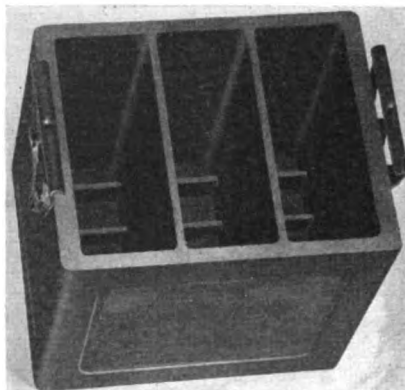
I KNOW considerable about gas engines, and harvesters, and the general run of farm machinery, but when it comes to batteries, I just about shut my eyes and do as I'm told." That's the impression you'd get from your neighbor, and perhaps, something like the one he'd get from you if you stopped long enough to talk about batteries. For storage batteries are a long way from being understood as well as they should be.

Usually it's a case of being too easily satisfied. Most of us are too busy, or think we're too busy to read up on this important part of the car, tho it is reasonable enough to believe that by adding a little to battery knowledge we might add a great deal to the life of the battery that serves us.

Dry reading? Not by any means. There is romance enough in the story of the development of the battery to make plots for dozens of stories, moving pictures and even books if all the facts

could be gathered.

What could be more dramatic than the discovery of Galvani, the Italian pro-



Partitions and Ribs Strengthen the All-Rubber Battery Case.

fessor of anatomy who first found that such a thing as a battery might be possible? It was Galvani who discovered

that the leg of a frog, after amputation, could be made to twitch by touching it in just the proper way with the steel scalpel he held in his hand. "Animal electricity," said Galvani, thinking he had discovered a great new principle. And so he had. He had, without realizing it, paved the way for discoveries that led to the modern motor car.

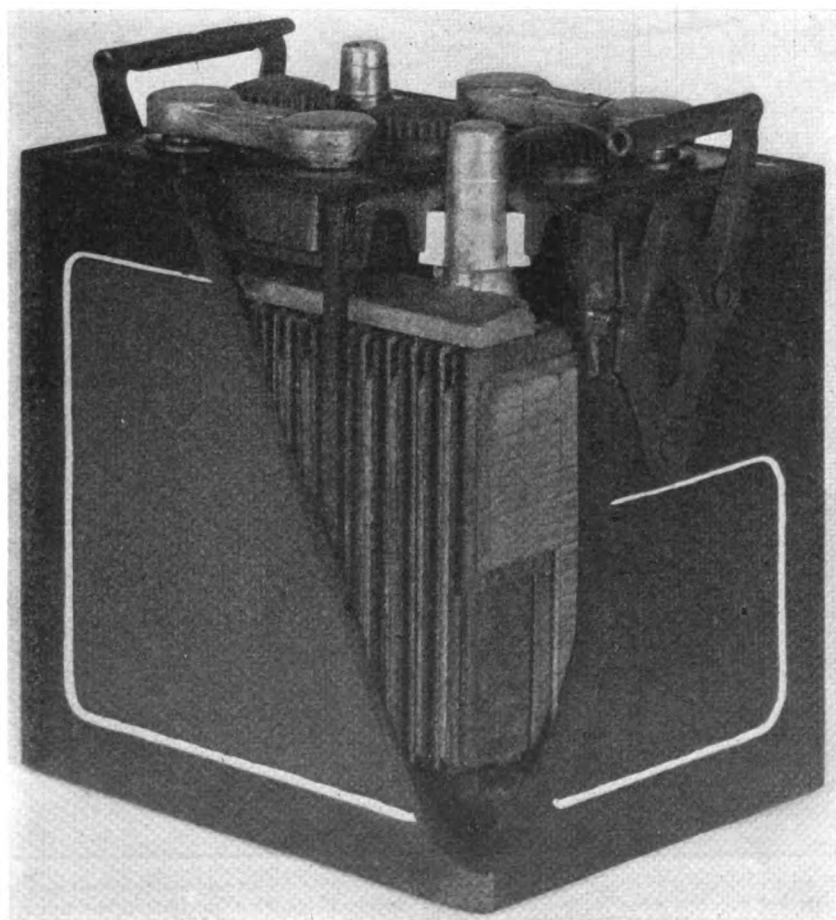
Science has not yet determined whether Galvani's animal electricity is a fact or not, but the frog-leg experiment was the beginning of a series of many other experiments that resulted in the construction, in about 1800, of the very first electric battery. This new and astonishing device was built by Alessandro Volta, also an Italian, and consisted simply of discs of silver and zinc separated by cloths moistened with salt water. These metal discs were the first positive and negative plates and the cloth the first separators.

The storage battery of today is different in two ways from this early battery; First, in using only one kind of metal and its compounds for the two plates; and second, in the fact that it can be renewed by supplying it with electricity from an outside source.

The framework, or grid which is used for both positive and negative plates is simply a lattice work of lead to hold the lead compounds that absorb and give out the electric current. These compounds are called pastes, due to their plastic condition when they are pressed into the lead lattice-work.

After the paste has been baked and formed, so that it is really part of the battery plate, it is called active material—a proper name, because it has all the work to do. The active material in the positive plate of a fully charged battery is peroxide of lead—a brownish substance—and in the negative plate, spongy lead, light gray in color.

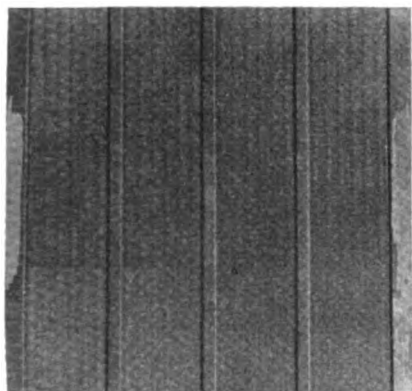
Briefly, the action of the battery in your car is this; when the motor is running and current is being supplied to the storage battery, the current forces more and more of the paste in the positive plates to become lead peroxide, and more and more of the paste in the negative plates to become spongy lead. At the same time acid is driven out of the plates so that the solution becomes stronger and stronger. The battery is fully charged when all the negative paste has been changed to lead, and all the positive paste to lead peroxide. The battery solution is so regulated that



An All-Rubber Battery Case with Corner Cut Away, Showing How the Plates Are Insulated by Threaded Rubber.

when this stage is reached the specific gravity—or its weight as compared to pure water, is 1.285. In other words the solution of a fully charged battery weighs slightly over one and a quarter times as much as an equal volume of pure water.

What happens when a battery discharges? It is a good deal like a tightly coiled spring, ready to uncoil little by little whenever it is given a chance. When you step on the starter you are in a sense, allowing the "coiled up energy" in your battery to unwind and start your motor. The active material is in what chemists call an unstable condition. The moment there is an oppor-



Threaded Rubber Insulation, Which Effectively Protects the Battery Plates.

tunity the active material in both sets of plates is ready to change over to lead sulphate. It is this chemical change that spins your motor, lights your lights, blows your horn, and is always so ready to work for you.

But plates alone do not make a practical automobile battery. There were dozens of other things that had to be done before the battery became the hard working, long-lived helper we now know so well.

To begin with it had to be built to stand an enormous amount of jolting, jarring, neglect and abuse. Its plates had to be far tougher than in the stationary battery. Its insulators had, not only to keep the plates apart, but also to allow free, and uniform circulation of battery solution so that the battery would respond quickly to demands for current. They had to distribute the wear evenly over the plates so that one part of a plate would not give out while all the rest of it was in good condition. And finally it had to have protection against outside shocks and blows that might tend to cause leakage.

All these requirements were met, to a considerable extent, in the very first batteries to go on motor cars. But if you compare some of the 1915 cars with the models in use today you will have a fair

idea of the improvement of the battery of today over those in use when starting and lighting was first used. For the improvement in batteries has been as great as the improvement in cars.

Several years ago threaded rubber insulation began to replace the ordinary wood insulation which was usually cut from cedar or cypress. Wood insulation is, of course, a natural product. But this does not mean that it is used in its natural state. On the contrary it has to be chemically treated to remove the wood acids, and from the time of this treatment until it finally wears out in the battery, a wood separator must never be allowed to dry out. That is why it is impossible to ship wood-insulated batteries in bone-dry condition.

Threaded rubber insulation is a manufactured product, and quite a remarkable one. It is made of sheets of high grade rubber, each sheet pierced with thousands of tiny threads. The purpose of the rubber is to separate and insulate the plates from one another. The object of the threads is to allow the solution to circulate. But the threads do more than allow circulation. Each one is a tiny wick that actually draws the solution thru—much as a lamp wick draws up oil. As there are approximately 196,000 threads in a single piece of threaded rubber insulation, the circulation of solution is almost as free as if the plates had no insulating material between them.

A development in the automobile battery even later than the perfection of threaded rubber insulation is the development of the one-piece or monobloc container.

This one-piece rubber container provides a moisture-proof, acid-proof case for the battery, but it does more than that. The rubber is formed into three compartments which take the place of the jars of the ordinary battery. The walls not only divide the battery into the necessary compartments, but reinforce the battery walls as well. As a result a battery with one of these containers is able to stand a surprising amount of rough handling.

The combination of threaded rubber insulation and the monobloc rubber container eliminates every particle of wood in the battery.



Water Cooler For Cream

WHETHER milk and cream keep sweet a proper length of time or sour early depends in very large measure, dairymen have discovered, on how quickly the milk is cooled after it has come from the cow, which means of course getting rid of the animal heat in a hurry. Water cooling has been

found to be much quicker than air cooling.

The photograph shows a device made by an Iowa farmer, which probably could be made to prolong the sweet life of cream a considerable time on many farms. He has found that by the use of it in connection with his separator that the temperature of the cream drops 12 degrees between the separator and cream can.

The little device can be made easily. It is just a cone of tin about 14 inches high and with a diameter of 10 inches at the bottom and four inches at the



Cooler Attached to the Separator.

top. A sheet of tin is soldered over the bottom so that it projects an inch or so beyond the edge of the cone and at one place widens into a small spout. The edge of the projection is turned up a trifle all around. Over the top of the cone is fitted a tin cap.

When the milk is being separated the device stands under the spout of the separator from which the cream comes. The cone is full of cold water. The cream goes into the cap, out in a thin stream thru a little circular slit in the bottom of the cap, and then flows down in a thin sheet over the cooled surface of the cone, to the little tin trough at the bottom—thence thru the spout into the cream can. The temperature of the cream will drop 12 degrees or even more between separator and can.—F. L. Clark.



YOUR body needs building materials just as much as does the contractor. Milk, cheese, meat, fish, eggs, vegetables, fruits, and greens are some of the body's bricks, stones, and timbers.

New Plow a Unit with Tractor

Unique Implement Attached to Fordson is Demonstrated

By JOSEPH D. EDDY

A TWO-BOTTOM tractor plow that is entirely different in the method of attaching it to the tractor has been brought to the United States by Harry Ferguson, of Belfast, Ireland. The plow is attached to the tractor in such a manner that it becomes a unit with the machine and is as flexible as the machine itself, a slight exertion on the part of the operator raising the bottoms from the ground. When raised the plow is suspended and the tractor may be driven across headlands, backed up, or maneuvered in any way that is desired.

The plow was demonstrated by its inventor on the farm of B. S. Blair, near Knox, Ind., where the photographs that accompany this description of it were taken. Perhaps a hundred farmers and others interested in the farm implement business watched the demonstration, and the outfit was put thru all sorts of trials.

As will be seen by the illustrations the two bottoms are attached to fishhook-shaped arms extending back from a special drawbar attached to the tractor. This

drawbar is fastened in place by curved pieces of steel that are attached to the drive-gear housing by three bolts. The drawbar is double, one extension being several inches above the other. The plow frame is attached to the two drawbars by pins.

One of the unusual features of the plow is the line of draft between the tractor and the plow bottoms. It will be noted in the picture that there is an inverted "V" of steel bars on top of the frame near the tractor. The tractor power is conveyed to the bottoms thru this "V". Should the plow points strike a rock, or any other obstruction, the power of the tractor attempts to straighten out this "V", which raises the rear of the tractor from the ground. In one of the illustrations on page 35, the points of the plows have been caught in the roots of the underbrush shown in the background and the rear, or drive wheels are whirling free from the ground.

The bottoms used on the plow were 13 inches wide. The depth the plows penetrate is regulated by the single wheel on the landside. To increase or lessen



A Two-Bottom Plow that Is Attached Directly to and Becomes a Unit with the Tractor.- Harry Ferguson, of Belfast, Ireland, the inventor of the plow is shown on the tractor seat.



Showing the Ease with which the Plows Are Raised from the Ground. The plows are suspended from the drawbar, making it possible to back the tractor.

the depth of the plows the wheel is raised or lowered on the arm to which it is attached. The angle of the plows also is adjustable by turning the handle, on which the driver has his foot in the picture on page 34.

While the soil where the demonstration took place was sandy and in consequence it was not possible to show how the plows will operate under varying conditions, one test with the wheel set for 12-inch plowing was made. Besides this depth several men stood on the plow frame, and no variation in the speed of the plowing was noted. ✚

Poor Tractor Lubrication Causes Owner Most Trouble

FAULTY lubrication is the source of trouble in the majority of cases where farmers have been unable to operate tractors to the best advantage, farm engineering specialists at the Kentucky College of Agriculture believe. Faulty spark plugs and other minor troubles can be corrected easily with little or no damage to the machine but when proper lubrication is neglected, a reduction in the lifetime of the machine is almost sure to result.

Included among the points which they have outlined in a number of lubrication suggestions are the following:

"It is a good idea to keep lubricating oil, greases, buckets and funnels in a clean, dust-proof cupboard since they easily collect dust.

"Use the kind and amount of oil recommended by the manufacturer.

"Extra attention should be given

the lubrication of the engine while it is new and stiff.

"Oil and grease on the outside of the bearings are a decided detriment, since they easily collect grit and dirt. A little oil in the right place is worth many pounds placed carelessly.

"Too much lubricating oil causes extra carbon and needless expense.

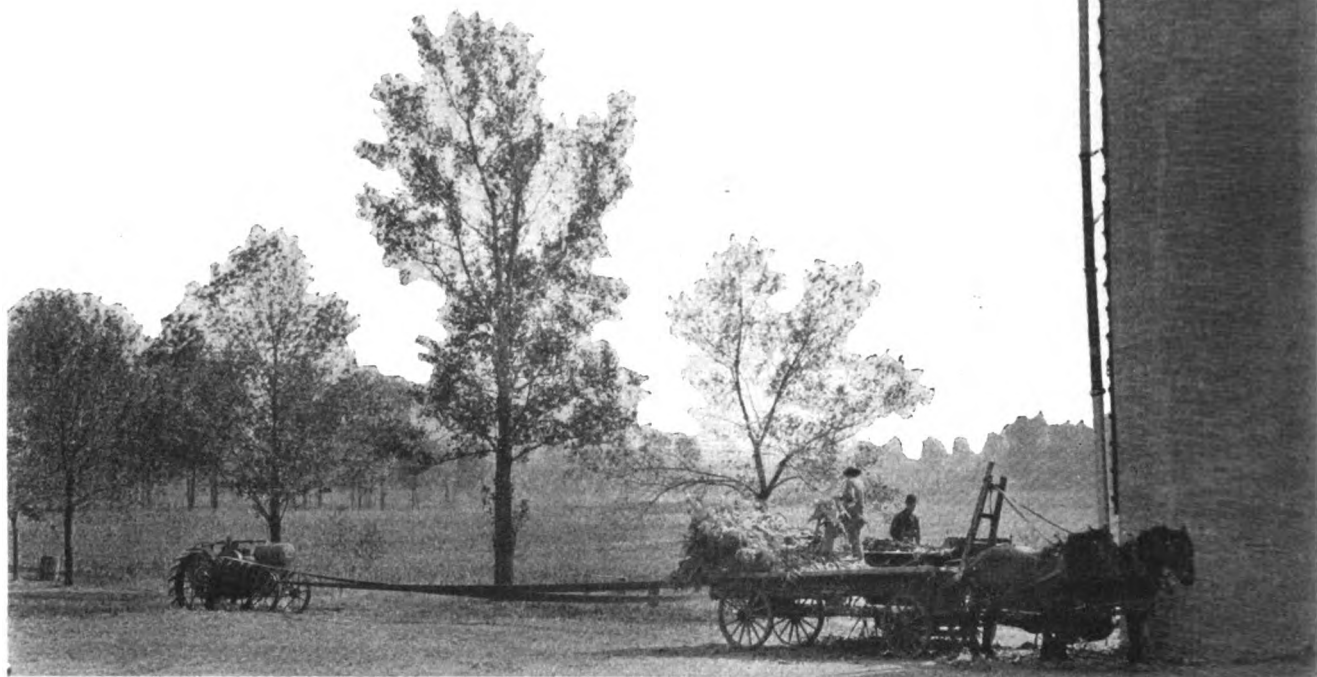
"On account of fuel passing the piston rings, oil in the crank case of the engine becomes worthless and must be removed. Such oil cannot be used again safely for the same purpose. ✚

FOOD is fuel. Poor fuel produces poor steam. Poor food, or the wrong kind of food, can't produce pep.



The Line of Draft on the Plow Is Such that When the Plow Hits an Obstruction the Drive Wheels of the Tractor Rise Off the Ground, and Spin As Shown in the Picture.

The Use of Power in Silo Filling



Cutters and Blowers Are Set to Carry Ensilage to a Certain Height and Filling by Stages Saves no Power

By ARNOLD P. YERKES

"DON'T shoot at game too far off or you will strain the gun," is an admonition most of us have heard, as boys, when the local wit or village cut-up felt called upon to give advice to us or to some of our chums who were the proud possessors of a new gun.

This warning has caused more or less worriment to a great many boys in the past and probably will in the future. Just what straining a gun has to do with filling silos, however, is probably not apparent at first thought, but nevertheless the simile has more or less application, as will be shown.

Recently there appeared a short item telling how a corn-belt farmer saved considerable time and gasoline by filling his 48-foot silo three-quarters full thru a hole at the height of 36 feet, and then completing the job by blowing the silage over the top in the usual manner. Such a saving is possible only in exceptional cases.

On this theory it would pay a farmer to fill his silo in several installments, and if the arrangements were such that the blower pipe could be introduced at vari-

ous heights, as is often the case, it would be advisable to start with a delivery pipe only a few feet high and raise it as the filling progressed. As a matter of fact, trying to save either time or fuel in this manner would in most cases be very much like trying to avoid straining a gun by not shooting at objects a long distance off. Paradoxical as it may seem, it might even require more power to fill the silo in this manner than by blowing all the material to the top of the silo.

The power required to run ensilage cutters may be divided into four classes, namely, the amount required to do the actual cutting, that absorbed by the impact of the blower blades and other rotating parts in imparting motion to the cut fodder, that required to move the air thru the pipe, and the amount absorbed in the feeding mechanism and bearings of the machine.

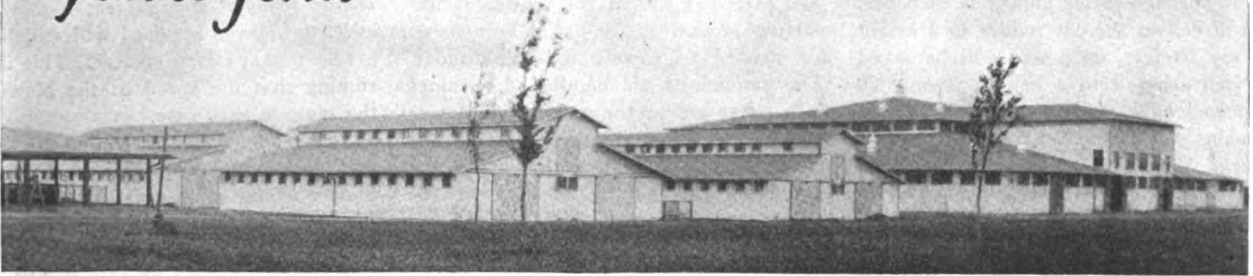
In considering the power required to elevate silage to different heights, we are not much concerned with the power used to do the feeding or the cutting, nor with that consumed by direct contact of the moving parts with the cut

fodder, altho these items are to some extent related to the point under consideration.

Before discussing the power requirements for the blower at different heights, it may be well to point out that in order to deliver the cut material to any given height a certain velocity of air thru the delivery pipe is necessary. It obviously does not require as great a velocity to blow the material to the top of a 20-foot silo as to the top of one 60 feet high. That is, the speed of the blower could be lowered for the 20-foot silo and yet deliver the material with entire satisfaction, just as a smaller charge of powder can be used in a shotgun shell when the shooting is all to be at a short range. But, just as the sportsman generally uses a fixed charge of powder which will kill game at all ranges within certain limits, so are ensilage cutters usually designed to deliver the cut fodder to all heights within a certain limit.

Furthermore, just as the fixed charge of powder will give a velocity to the shot which will enable it to travel a given distance, so will a fixed speed of

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you'll find----*



Richards-Wilcox

Door Hardware



THE Central States Fair and Exposition buildings at Aurora, Illinois, prove the fallacy of the old saying that "A prophet is without honor in his own country." All sliding doors used on these buildings are equipped with Richards-Wilcox sliding door hardware, manufactured in Aurora just a few miles from the Exposition grounds. That this hardware was chosen by the designers of the Exposition buildings after a thorough search for the best to be obtained, should be sufficient evidence of R-W superiority.

Used on the Greatest Farms in America

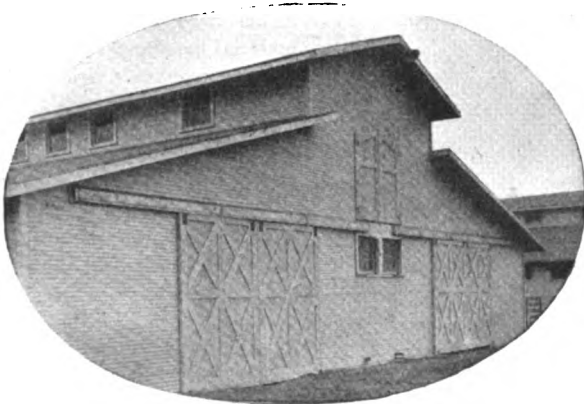


Illustration shows "close-up" of one of the Central States Fair buildings, equipped with Richards-Wilcox barn door hardware.

In a recent series of articles published in *Farm Mechanics*, wherein America's greatest farms were described, it was a matter of much pride to the Richards-Wilcox Manufacturing Company to know that in every instance Richards-Wilcox Hardware had a prominent place in the construction of the farm buildings.

Let us send you our booklet, recently prepared, which describes in detail all hardware items which Richards-Wilcox manufacture for farm use. Ask for "Hardware for the Farm and Home."

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"Slidetite"

Is the most widely imitated garage door hardware. "Imitation is the sincerest form of flattery."



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Manufactured by Richards-Wilcox, is the original sliding-folding garage door hardware.

the blower deliver the cut fodder to a given height. If a shotgun shell capable of killing game at 40 yards is fired at a bird only 10 yards away, it is no easier on the gun and no less power is consumed. Of course, a smaller charge would kill at the shorter distance, but unless such reduced charge is used there is no saving. Similarly, if the speed of an ensilage cutter blower is such that it will deliver the cut fodder to a height of say 60 feet, no power will be saved by delivering it to a height of only 20 feet so long as the speed of the blower remains the same. Like the shotgun charge, the speed of the blower can be reduced and yet deliver the material to the shorter height, but unless this is done no saving of power is possible. In fact, it may even require more power to deliver the material at the lower height, as already mentioned, for the reasons given hereafter.

In computing the power required to drive an ensilage blower, the amount of material to be raised or the height to which it is to be raised are of no concern. It is not a matter of raising a given weight to a given height, as might seem at first thought, but a case of mov-

ing a certain volume of air at a certain speed and against a given resistance.

As already pointed out, the blower imparts motion to part of the cut material by direct impact. The power used in this way varies with the speed of the blower and the amount of fodder being handled—it is not affected in any way by the height to which the fodder is blown. The principal job of the blower is imparting motion to the large volume of air needed to elevate the cut fodder. The amount of air handled determines to a great extent the amount of power which will be required to operate the blower, and it is obvious that unless the speed of the blower is lowered the power required will not be reduced merely because the cut fodder which is passing thru is raised to a less height, for the amount of air driven thru the pipe is not lessened by shortening the pipe; on the other hand, it is likely to be considerably increased.

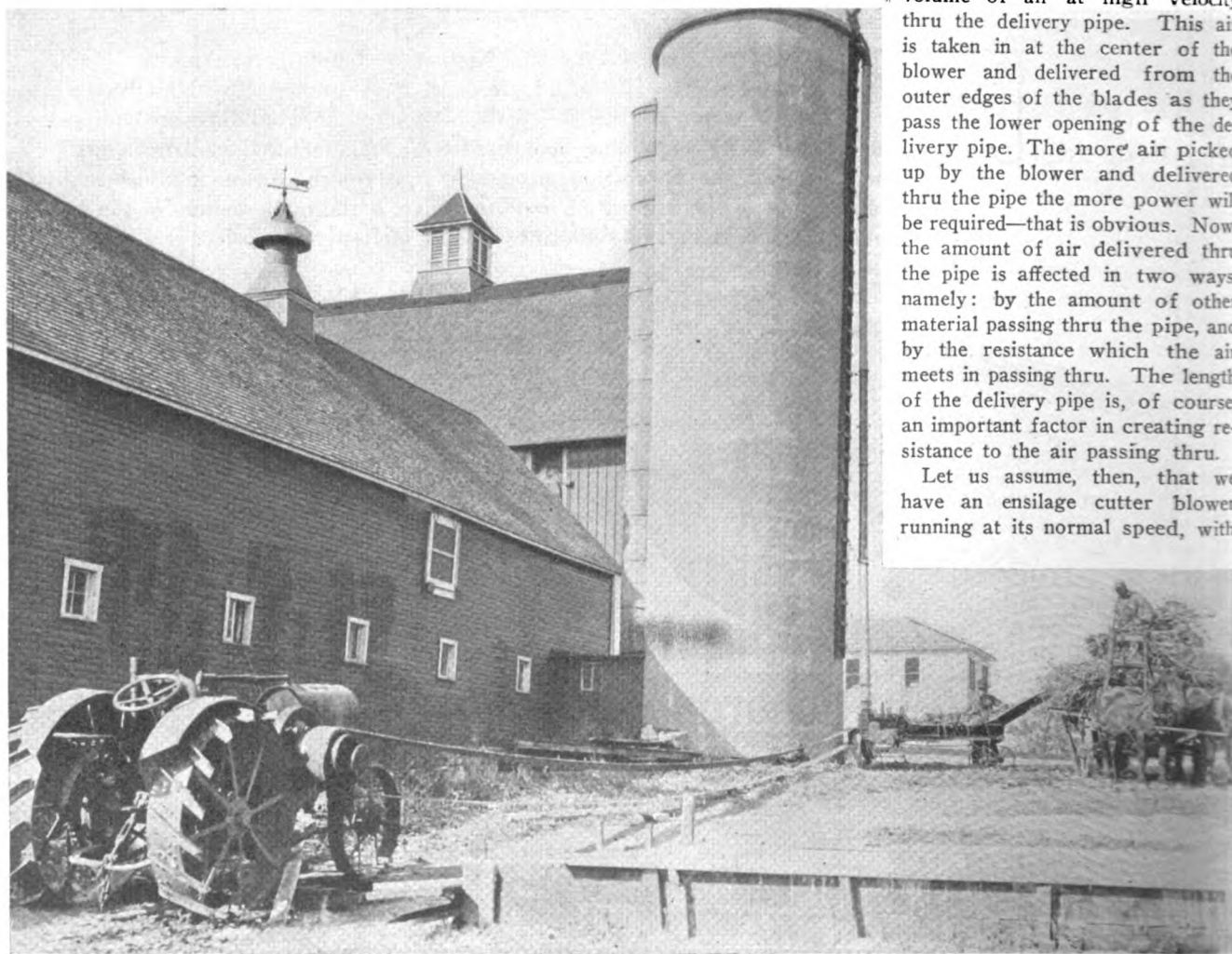
After the blower has once struck the cut fodder and discharged it into the delivery pipe with a stream of rapidly moving air which was also set in motion by contact with the blower blades, it makes no more difference to the

blower where the cut fodder leaves the pipe than it makes to a shotgun where the shot stoops after it has once left the barrel. If the velocity of the air is great enough to carry the cut fodder to the top of a 60-foot pipe, all well and good—the power has been expended and if the pipe is 60 feet high the fodder will be discharged from the top of it. If the pipe is only 30 feet high, however, the power required will still be as great—perhaps even greater. This is assuming that the speed of the blower is the same in each case.

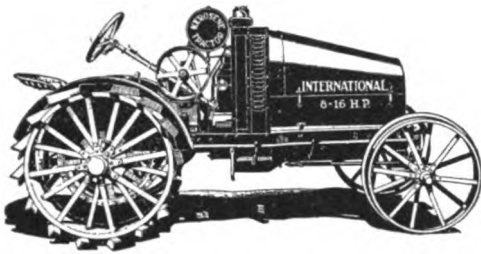
The reader may be willing to admit that the power required to drive the blower would be as great in one case as the other, but at first thought will probably be inclined to take exception to the statement that more power would be required at the lower height. Many will doubtless be skeptical, also, concerning a statement to the effect that less power will be required to drive the blower then material is being elevated thru the pipe than when only air is passing thru. Both these statements are correct, however, as will be demonstrated.

The principal work of the blower, as already pointed out, is to deliver a large volume of air at high velocity thru the delivery pipe. This air is taken in at the center of the blower and delivered from the outer edges of the blades as they pass the lower opening of the delivery pipe. The more air picked up by the blower and delivered thru the pipe the more power will be required—that is obvious. Now, the amount of air delivered thru the pipe is affected in two ways, namely: by the amount of other material passing thru the pipe, and by the resistance which the air meets in passing thru. The length of the delivery pipe is, of course, an important factor in creating resistance to the air passing thru.

Let us assume, then, that we have an ensilage cutter blower running at its normal speed, with



The Ensilage Cutters and Blower Are Constructed to Utilize the Full Belt Power of the Tractor, Which Makes the Use of This Power Efficient and Economical.



International 8-16 - - - - - \$670

Titan 10-20 - - - - - \$700

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[Tractor and Plow f.o.b. Chicago]

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REMEMBER that these are not stripped tractors, pared down to make low prices. Titan at \$700 and International 8-16 at \$670 include all essential equipment—belt pulley, fenders, platform, throttle governor, adjustable drawbar, angle lugs, brakes. This equipment for each is worth more than \$100, and is necessary on any tractor to make it serviceable and safe. And above all, the prices include P & O Tractor Plows—2-bottom with the International 8-16 and 3-bottom with the Titan 10-20.

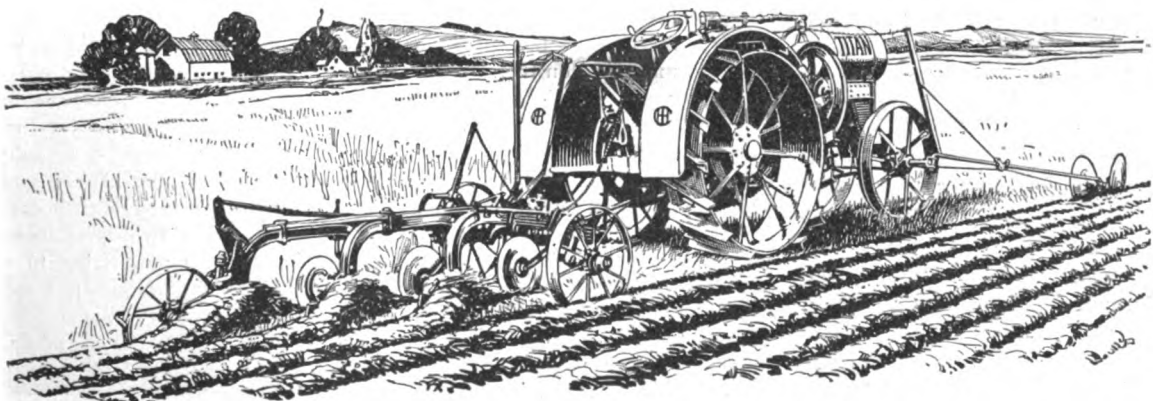
THIS is a time for investment in Titan 10-20 or International 8-16 tractor power. Make your choice and get the complete outfit from the McCormick-Deering dealer. Every day, keep this efficient power at work at your fall plowing and other drawbar work, and tie it up to all sorts of belt machines. By winter time you will be enthusiastic about the all-around usefulness and economy of International Harvester tractors.

These tractors have enormous reserve power, as every owner knows. They pull their plows in all soils with the greatest ease, and they have extra belt power in proportion. They are famous for long life. As the seasons go on you will find them outlasting smaller, inferior tractors, actually by several years. You will find also that they do their best work on kerosene and that the expense of repair and upkeep is remarkably low.

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a tight cover over the opening for the delivery pipe. Running in this way, the blower takes very little power, because there is no opening for the air to pass out, and the blades, instead of throwing off a volume of air at each revolution and picking up more air from the center, merely push the same air round and round in the blower housing.

Now take the cover off the opening for the delivery pipe, and the blower will take a maximum amount of power, because the blades deliver the air thru the opening with practically no resistance, and the blower is therefore handling its maximum capacity of air.

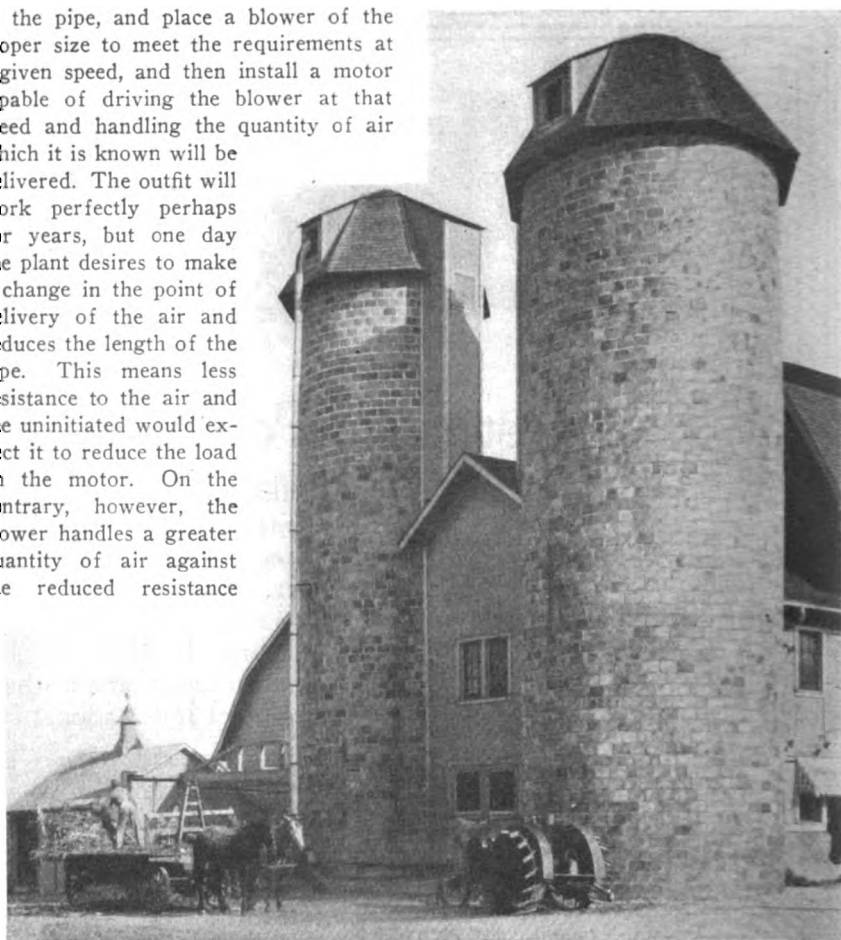
If we now put a 60-foot delivery pipe in place, the blower will have to deliver the air thru the pipe against a certain resistance. The amount of air handled by the blower is therefore reduced somewhat, and the power required to drive the blower, instead of increasing, as might seem logical, really decreases.

Now suppose we feed some cut fodder or other material into the pipe just beyond the blower, so the blower has no direct contact with it. The moving air will carry it to the top of the pipe, assuming that the speed of the blower is great enough, but this material occupies some of the space in the pipe which was formerly occupied by air, and it also offers some resistance to the air which is passing thru. This means the amount of air handled by the blower is again reduced, and the power required to drive the blower is likewise reduced. Hence, the power required to drive the air thru the pipe is less when material is passing thru than when only air is being handled. In other words, the greater the resistance to air passing thru the pipe, the less air is handled and the less power is required.

Suppose, now, we take off the upper 30 feet of the pipe, and no matter whether we blow only air or air and fodder, it is obvious that some of the resistance has been removed, and instead of reducing the power required we have increased it, because the blower can pick up and deliver more air when the air can pass thru more freely. Other things being equal, therefore, it will require more power to fill a short silo than a tall one within the limits of the cutter used.

As an illustration of this fact a not infrequent occurrence in manufacturing establishments may be cited. A blower company will contract to install a blower to deliver a given volume of air at a certain velocity, thru a given length and size of pipe. Their engineers will calculate the resistance against which the air will have to be delivered, determined by the length, size, and direction

of the pipe, and place a blower of the proper size to meet the requirements at a given speed, and then install a motor capable of driving the blower at that speed and handling the quantity of air which it is known will be delivered. The outfit will work perfectly perhaps for years, but one day the plant desires to make a change in the point of delivery of the air and reduces the length of the pipe. This means less resistance to the air and the uninitiated would expect it to reduce the load on the motor. On the contrary, however, the blower handles a greater quantity of air against the reduced resistance



Blowing the Cut Ensilage Into the Top of a Tall Silo with a Small Tractor.

and requires more power to drive it, and as a consequence the motor is overloaded and promptly burns out. It is almost a case of straining a gun by shooting at objects too close.

From the foregoing, it will be plain that in order to reduce the power required to operate an ensilage cutter by lowering the height of the pipe, it will be necessary to reduce the speed of the blower. But here's the rub—most ensilage cutters are so made that when the speed of the blower is reduced, the speed of cutting is also reduced. The cutters are made for a certain capacity per hour, regardless of the height of the silo. In the case of the cutters having the knives mounted on the same shaft as the blower, and therefore running at the same speed as the blower, it is obvious that reducing the speed of the blower reduces the speed of the knives as well, which, of course, means handling less fodder per hour. With some types of cutters, where the knives are on a separate shaft, it is possible to vary the speed of the blower slightly without changing the speed of the knives, and with such cutters it would be possible to reduce the power requirements by shortening the delivery pipe, provided the speed of the blower was also reduced, and yet maintain the same rate of cutting. But the range of adjustment is too small in

most cases to make it worth while making the change and changing the setting of the delivery pipe.

The vast majority of ensilage cutters have no provision for varying the speed of the blower without varying the speed of the knives as well, and the farmer who has one of these cutters will be wasting time trying to save power by filling the silo in installments. In other words, 'most ensilage cutters are "loaded" for a given height, and the quickest and most satisfactory way of filling a silo with them is to run the delivery pipe to the top right at the start and keep running.

There may be a few instances where a cutter is being used on a silo which requires just about the maximum capacity of the machine to deliver the material to the top, and where a slight choking or slowing of the blower speed causes the pipe to clog. In such cases it may pay to fill in two installments, not in order to save power, but to save time, for with a shorter pipe less speed of the air is necessary, and the amount of slowing up which choked the pipe at the full height will not interfere at the lower one, hence the cutter can be kept at work more steadily and the feeding crowded a little more without so much danger of choking, but these instances will be comparatively rare.

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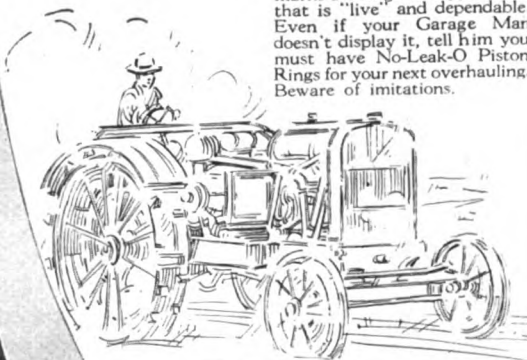
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Eve Gets Blame for Wash-Days

If She Hadn't Eaten the Apple There Might Not Have Been Clothes, With the Resultant Necessity of Washing Them

By F. J. ST. JOHN

THERE doesn't seem to be much connection between apples and washday. Still, if Eve hadn't eaten the apple, way back in the Garden of Eden, there would have been no washday.

For if there had been no flirtation with the forbidden fruit, there would have been no shame and no scramble for the historic fig leaf. There would have been none of the later, more extensive costumes that have developed from that primitive fig leaf garb, there would have been no clothes to worry about and, naturally, there would have been no family washing.

Strange, when you think of it, what momentous things have developed from that one little bite at an apple. Think what the world would have missed, had Eve haughtily directed his Satanic Majesty to depart into his own place and just leave her and Adam alone in the joys of their Eden.

Think of the Paris styles that would never have been perpetrated; of the clothing business that would never have been born into a world of bargain sales, fire sales and going-out-of-business opportunities for a be-clothed population. Think of the washdays the world would have missed.

But all such ifs and speculative conjecturings are idle. For Eve did eat

of the apple, and clothing shortly became popular. Then, I suppose about a week after that catastrophic occurrence, there came a washday. And regularly, once a week, for all folks who maintain any semblance of family life, there have been washdays ever since.

Some way or other, too, in dividing up the family tasks, the family washing got sawed off onto the women folks. Perhaps, during the days when clothing was in the fig leaf stage there wasn't enough of it to be made a man-sized job and so, gallantly, as has always been his habit, man allowed his wife to look after the laundry as something which would serve to give her a little mild diversion and keep her out of mischief.

But when the styles began to change and clothing patterns grew larger, man, forgetting his natural gallantry, neglected to take over the labor of washday. It became a hard job and has been a hard job thru a long period of time.

It has been approached, has washday, in many different ways thru the passing years. During the ages when slave labor was available, and in localities where hired labor was cheap, much of the washing was done by proxy. With the changes which have taken place during recent years, however, with labor

getting scarcer and with that spirit of independence inculcated by our forefathers growing ever stronger in the breasts of erstwhile washwomen, it is becoming ever more and more necessary that every housewife shall be responsible for her own weekly laundering of the family fig leaves or whatever the family may be wearing in the nature of clothes, at a particular time.

That is, she assumes the responsibility while she is enjoying her normal health and strength. Doing the family washing by main strength and in the old, time-tried fashion, with tub and washboard is popularly supposed to be responsible, more or less directly for the broken health, for the aches and ills which attack the housewife when she gets up to a point in life when the glamour of young womanhood has departed, when the grace of youth has left her limbs and a hard day over the washtub looms up before her for just what it is, a back-aching, heart-breaking task.

It has happened, you all know, whether as a matter of retributive justice we will not attempt to say, that man has been compelled, at times, to bear a hand with the washing and go thru with the whole disheartening job, from rubbing the clothes, boiling, rinsing, wringing, bluing and starching them, to hanging them on the clotheslines, perhaps on a bitterly cold day. You know, with a freezing wind trying to snatch a wet garment away and maybe wrapping its clammy folds around your neck, and you hold it on the line with both hands, and a good supply of clothespins in your mouth, while you wonder how you are going to snap a clothespin into place without loosening your hold on the clothes.

Your bones are chilled and your temper's gone by the time your basket is empty. You wonder how the dickens your wife can get out there with perhaps a castoff sweater over her washday dress and a nondescript old hat perched precariously on her head, get those clothes on the line in one-half the time you can do it and then come smiling into the house without a word of complaint at her hardship.

It's that world-old feminine characteristic of enduring and suffering uncomplainingly, of course, but you bet your life when the husband comes thru a round of family washing, he's imbued deeply with the idea that it's all wrong



This Is the Way Mother Used to Wash Before the Days of the Power Washer and Wringer.



Chart of Recommendations

Trade Name	Motor Oil	Trade Name	Motor Oil
Akron.....	H.	Magnet B.....	H.
Allis-Chalmers—All Models.....	H.	Mark VI Once Over.....	H.
Allied.....	H.	Midwest.....	E. H.
All Work—Both Models.....	H.	Minneapolis, 12-25 and 17-30.....	H.
Andrews-Kinkade.....	E. H.	Minneapolis, 22-44 and 35-70.....	E. H.
Appleton.....	H.	Mogul.....	H.
Armington.....	H.	Mohawk.....	H.
Aultman-Taylor, 22-45.....	E. H.	Monarch-Industrial.....	H.
Aultman-Taylor, 30-60.....	E. H.	Nilson Junior & Senior.....	H.
Ayltman-Taylor, 15-30.....	E. H.	Ohio.....	H.
Automotive.....	H.	Oil Gas, 20-42.....	E. H.
Avery Model C.....	H.	Oil Gas, 25-50.....	E. H.
Avery, 8-16, 12-25, 25-50, 14-28, 18-36, 40-65.....	E. H.	Parrett.....	H.
Avery Track Runner.....	H.	Peoria.....	E. H.
Bates.....	E. H.	Pioneer, 18-36 and 30-60.....	E. H.
Bates Steel Mule—All Models.....	H.	Plow Man.....	H.
Bear.....	H.	Porter.....	H.
Best Tracklayer, 30.....	E. H.	Port Huron.....	H.
Best Tracklayer, 60.....	E. H.	Prairie Dog, 10-18 and 15-30.....	H.
Big Farmer.....	E. H.	Quadpull.....	H.
Big Four, E-B.....	E. H.	Reed.....	H.
Biltwell.....	H.	Reliable.....	E. H.
Boring.....	H.	Rex.....	H.
Burnoil.....	E. H.	Rumely Oil Pull, 12-20.....	E. H.
Capitol—All Models.....	E. H.	Rumely Oil Pull, 16-30.....	E. H.
Case, 10-18 and 15-27.....	H.	Rumely Oil Pull, 20-40.....	E. H.
Case, 22-40.....	E. H.	Rumely Oil Pull, 30-60.....	E. H.
Case, 20-40.....	E. H.	Russell "Big Boss," 20-35.....	E. H.
Cletrac, 9-16 and 12-20.....	H.	Russell "Giant," 30-60.....	E. H.
Coleman.....	E. H.	Russell "Little Boss," 15-30.....	H.
Common Sense.....	H.	Russell "Junior," 12-24.....	H.
Dakota.....	H.	Samson Model M.....	H.
Dart Blue "J".....	H.	Savage A.....	E. H.
Depue.....	H.	Shawnee, 6-12 and 9-18.....	H.
Dill Harvesting.....	M. H.	Shelby Model C.....	H.
Eagle, 12-22 and 16-30.....	E. H.	Shelby Model D.....	E. H.
E-B, 9-16 and 12-20.....	H.	Square Turn.....	E. H.
E-B, 16-32.....	H.	Stinson Heavy Duty.....	H.
Farm Horse.....	E. H.	Titan.....	H.
Farquhar, 15-25.....	H.	Topp-Stewart.....	H.
Farquhar, 18-35 and 25-50.....	H.	Toro.....	H.
Fordson.....	H.	Towneend—All Models.....	E. H.
Flour City Junior, 20-35.....	H.	Traylor.....	H.
Flour City, 30-50 and 40-70.....	E. H.	Triumph.....	E. H.
Fox.....	E. H.	Trundaar.....	H.
Four Wheel Drive Fitch.....	E. H.	Twin City, 12-20 and 20-35.....	H.
Frick, 12-20.....	E. H.	Twin City, 40-65.....	E. H.
Frick, 15-28.....	H.	Twin City, 60-90.....	E. H.
Good Field.....	H.	Uncle Sam—All Models.....	H.
Grain Belt.....	H.	Vim.....	H.
Gray.....	H.	Wallis.....	H.
Great Western.....	H.	Wallis Cub.....	H.
Hart-Parr—All Models.....	E. H.	Waterloo Boy N.....	H.
Heider—Model "C".....	H.	Wellington, 12-22 and 16-30.....	E. H.
Heider—Model "D".....	H.	Westmore.....	H.
Holt Caterpillar, T-35.....	H.	Western.....	E. H.
Holt Caterpillar (5 Ton).....	H.	Wheat.....	E. H.
Holt Caterpillar (10 Ton).....	E. H.	Whitney.....	E. H.
Holt Caterpillar (15 Ton).....	E. H.	Wichita.....	H.
Huber Light & Super Four.....	H.	Wilson.....	H.
Illinois Super Drive, 18-30 and 22-40.....	E. H.	Wisconsin, 16-30 and 22-40.....	E. H.
Indiana, 5-10.....	H.	Yuba Ball Tread—All Models.....	H.
International, 8-16.....	H.		
International, 15-30.....	H.		
J. T.....	E. H.		
Keck Gonnerman.....	E. H.		
Kinnard.....	H.		
La Cross.....	H.		
Lauson, 12-25 and 15-30.....	H.		
Leader, 18-36.....	H.		
Leader, 12-18 and 16-32.....	E. H.		
Leader, 18-35.....	E. H.		
Leonard Four Wheel Drive.....	H.		
Liberty.....	E. H.		
Little Giant A & B.....	H.		
London Model S, 12-25.....	H.		

N. B. For recommendations of grades to use in automobiles and trucks consult chart at any Standard Oil Co. (Indiana) station.

KEY

M. L. — Polarine Medium Light.

M. H. — Polarine Medium Heavy.

H. — Polarine Heavy.

E. H. — Polarine Extra Heavy.

Add Years of Life to Your Tractor

THE heart of your tractor is the engine. The life blood of the engine is the oil which lubricates it. When you give your tractor correct lubrication, you are adding years of life to the machine. There is no such thing as a second best lubricating oil or grease. There is only the right kind and the wrong kind. The right kind not only prolongs the life of the tractor, but gets more power out of it, and substantially reduces your fuel and repair bills. The wrong kind means "scored" cylinders, "burned" bearings and a host of other expensive damages. Repair bills for such damages are simply inexcusable in the light of present scientific knowledge.

Use Polarine

THE PERFECT MOTOR OIL

Made In Four Grades

Seals Pistons Against Loss of Power

The correct grade for your tractor is indicated in the chart. Expert chemists working in the modern laboratories of the Standard Oil Company of Indiana have perfected these grades of Polarine after studying the design of the tractor, the type of lubricating system used, and the behavior of the engine both in the shop and on the farm.

There is nothing theoretical about Polarine Oils. They are scientifically correct and practically efficient. They take into account all the mechanical factors; for instance, clearance between the piston and the cylinder wall, method of cooling, lubricating system used, etc.

Polarine flows freely between the bearing surfaces, seals pistons against loss of power, leaving no dry spots which would rub together and score the cylinders.

Avail yourself of tested, scientific lubricants recommended by the staff of lubricating engineers of the Standard Oil Company (Indiana) bearing the name Polarine, The Perfect Motor Oil. Consult the chart to the left.

STANDARD OIL CO., 910 So. Michigan Ave.
(Indiana) CHICAGO 2666

and that there ought to be an easier way to do the washing. He finds the easier way, too. He invents washing machines. Does he invent them to save his wife the hardship and drudgery of washday or to save his own knuckles from getting all skinned up during one of these emergency encounters with the family washboard?

Let's be charitable and assume that he has become fired with the determination that his wife isn't going to suffer the ills of the old-fashioned washday any longer. But let's don't forget that his determination was probably fixed by his own experience over the wash-tub, one day when the good wife was incapacitated and he had, perforce, to step into the breach.

At any rate, he has invented washing machines—and clothes wringers. He has developed them until they are driven with electricity and do all the actual hard work of washing and wringing. The operator's job is largely one of supervision, of turning electric switches, of removing a cleaned batch of clothes and putting an unwashed lot into the washer.

He has made many different types of electric washing machines. Some have had no wringers, but dried the clothes by centrifugal action, caused by the whirling of the tub itself. Usually there is a wringer, however, driven, like the tub, by an electric motor. Generally there is just a single motor running tub and wringer, the power being transmitted and controlled by means of sets of gears, gearshifts and clutches, that make tub or wringer start and stop at the will of the operator.

The latest development, perhaps, is an electric washer and wringer with two motors, one for the tub and one for the wringer. Each of these is considerably smaller, of course, than the ordinary, single motor frequently used and made necessary because of the power needed when the tub and wringer are used simultaneously. As



The Wringer on the Modern Washing Machine Also Is Operated by a Motor.

illustrated, one reversible motor is placed right at the tub bearing and rocks it with a simple driving gear. This motor reverses automatically when the current is turned on and rocks the tub at a speed of about thirty-three times a minute.

The other motor is placed at the top of the wringer supporting column and is controlled by a switch right at the motor itself. A touch on the switch starts, stops or reverses the wringer motor.

Washing machine development has been going thru the same improving process which has characterized all the really important machinery invented for us—the grain binder, the automobile, and all the rest. Styles have changed in washing machines just as they have in automobiles and other machinery, thru the refining experiences of the years. They have been developed, tho, with a fine sense of appreciation of the job they had to do and with an honest striving after the true goal—and labor-saving qualities which man came to understand they ought to have, after he learned by practical experience how far the old tub-and-washboard combination missed the ideal.

Today, as stated above, washing with one of these modern electric washers is largely a matter of supervision. Once the clothes are put into the tub, with the necessary soap and hot water, and the switch is turned, then the housewife can turn her attention to something else for at least twenty minutes.

While the clothes are washing she can wring and rinse a previously washed batch, or she can gather up the break-

fast dishes, or feed the chickens, call up Mrs. Wilkins on the 'phone and get that mixed pickle recipe, or take her magazine and rocking chair and sit down to read, with the electric washer working away in the background, for all the world like a regular washing machine advertisement.

I've a sneaking notion, anyway, that every woman who gets one of these new electric washers tries it out once, at least—you know—sits down to read while the washer is running, just to see how it would seem. When she used to study the pictures of women doing that, it looked too good to be true, but she tries it and finds that it works out all right. She can sit and rest while electricity does the washing. And so

(Continued to page 48.)



Washday Is Not a Day of Rejoicing When There Is a Large Family and No Washing Machine.



Scene in a Well Equipped Laundry.

LA CROSSE

No. 12 PLOW FOR THE FORDSON

Value-Plus

THE La Crosse No. 12 Plow has all the qualities a good plow should have, plus many features which make it particularly valuable to the Tractor User.

The Plus Points are those which count.

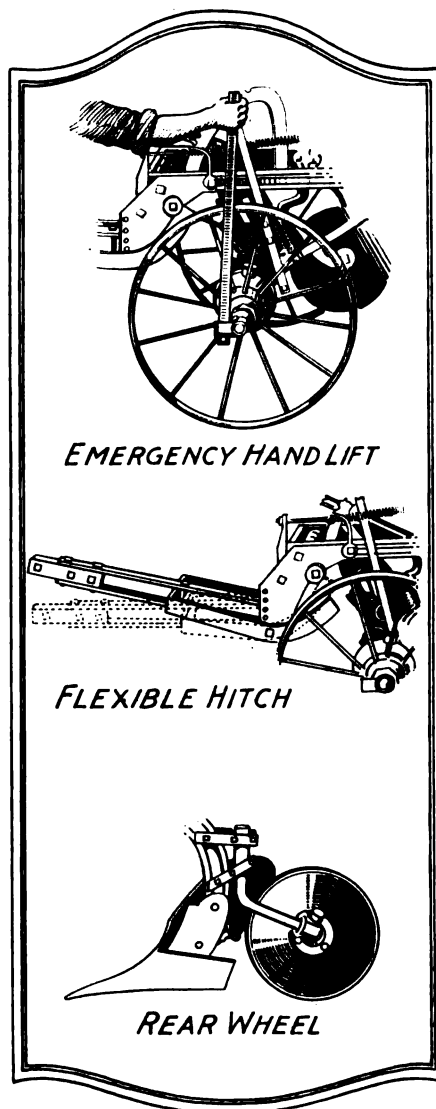
La Crosse Plows are *Light Draft Plows*.

The Emergency Hand Lift, which enables the operator to lift the plow when the tractor is not in motion, will save valuable time.

The Flexible Hitch allows the plow to hold a constant depth independent of the variations in the tractor drawbar. This guarantees an even seed bed.

The Adjustable Rear Wheel carries the weight of the bottoms off from the bottom of the furrow and away from the furrow wall. Elimination of landside friction means lighter draft — lighter draft means a saving in fuel and wear and tear on your tractor.

Write us today for further details.

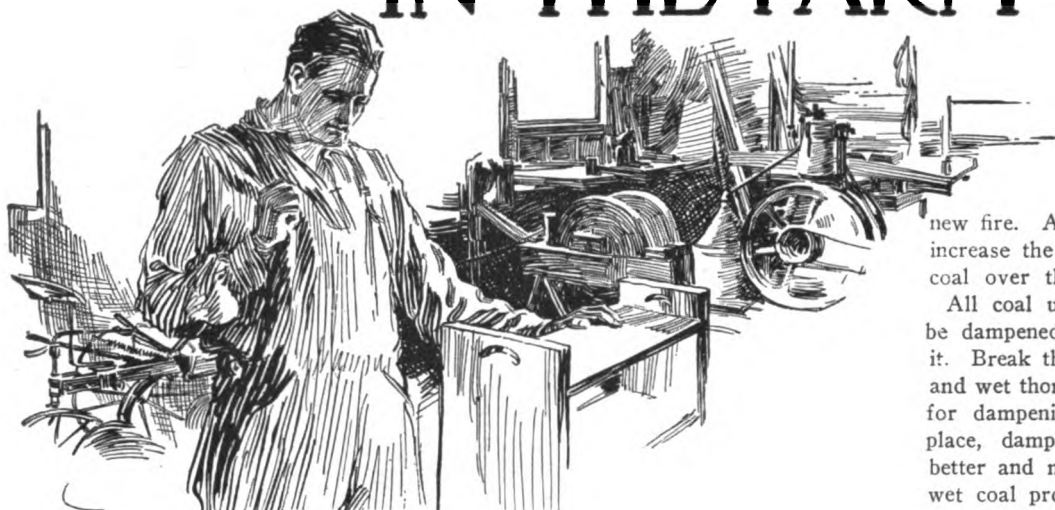


LA CROSSE PLOW CO. INC.
"Makers of Light Draft Plows"

LA CROSSE, WISCONSIN

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

IN THE FARM SHOP



The Forge and Forge Fire

By LOWELL R. BUTCHER

A GREAT deal of the success of the forging and welding operations depends upon the forge fire. There are several different kinds of fires, but the large and small fires will, perhaps, include them all.

The principal part of the forge consists of a cast iron bowl with a small depression in the center. A hole opening out of the depression admits the air blast which hastens the action of the fire. This opening, or tuyere, is shaped to allow the air to enter, yet keeps cinders and dirt from dropping back into the blast pipe. Usually there is an opening in the blast pipe to allow for the removal of any cinders that may find their way there. The air blast of the small forge is formed by a fan operated by a crank.

The coal used in forge work should be selected for that particular use. Ordinary coal will not give good results. Only the best grade of soft coal should be used for forge work. This will "coke" easily; that is, when dampened and put on the fire it will cake

and form coke and not break up into fine pieces when turning to coke. The lumps of good forge coal will show an even structure and crumble easily in the hand. When crumbled in this way, all faces of the coal should look bright and glossy. A coal of this sort will form very few clinkers when burning.

In building a new fire in the forge, it is not necessary to clean out the entire hearth of the forge. The hearth of a forge is usually kept level full of cinders and coke and only a small portion about the tuyere or blast opening

new fire. After the fire is well started increase the air blast and spread green coal over the coke.

All coal used in forge work should be dampened before attempting to use it. Break the coal up into small pieces and wet thoroly. There are two reasons for dampening the coal. In the first place, damp coal will stick together better and make the best coke. Again, wet coal provides an excellent heat in-



To Hold the Fire Bury a Wood Block Before Banking the Fire.

sulation, keeping the fire from spreading and centralizing the heat.

The fire should not be used until the green coal placed on top has had time to coke. Push the coke surrounding the fire into it as the center burns and add more coal around the edges. A forge fire is made of three parts, the center, where the coke is burning and the iron to be heated, a surrounding ring of hot coal that is turning to coke and a larger insulating ring of dampened coal. It will be seen that coke is the fuel used for heating the iron and that a good forge fire should be manufacturing coke as it is needed.

The type of fire just described will do very well for the most common work, provided that the piece to be heated is small. After using for about two hours, it should be cleaned and all clinkers removed. In doing welding work, it should be cleaned much oftener.

A larger fire, sometimes called a stock fire, is used for large work and, if properly built, will last for some time. Before the forge fire proper can be built, enough coke is made to last several hours. This is best made by heaping up green coal over a slow-burning fire which is supplied with a



Putting in the Waste to Start the Fire.

cleaned out for the fire. The space cleaned out will be determined by the size of fire wanted; a space 12 or 14 inches in diameter is sufficient for a small fire.

A piece of pipe or a round block, 4 to 6 inches in diameter, is useful in starting a small fire. Place this over the center of the tuyere and heap "green" or dampened coal about it, packing the coal tightly. The pipe is now removed and a piece of oily waste or some dry shavings placed in the opening. Light the kindling and, starting a gentle air blast, feed coke to the fire. Sufficient coke will be left over from the preceding fire to start the



Removing the Pipe from the Center of the Forge Fire.

THE LOWEST COST CRAWLER ON THE MARKET

*With all of the advantages and none of
the disadvantages of the bigger crawler*

**You can fit
RIGID RAIL TRACKS
to your Fordson in an hour and—**

Make a Crawler of Your Fordson
The lowest cost Crawler on the market.

Double the Drawbar Pull
You do more work with the same amount of fuel.

Eliminate Slippage
Same speed as the wheel machine, but

Lower and Narrower and More Powerful
For orchard and vineyard.

A Pace Maker in Road Grading,
Plowing, Industrial Plants.

Work on Soft or Sandy Ground
Fine for rice fields.

Will Outwear Your Tractor
With Hyatt Bearings and Alemite Cups.

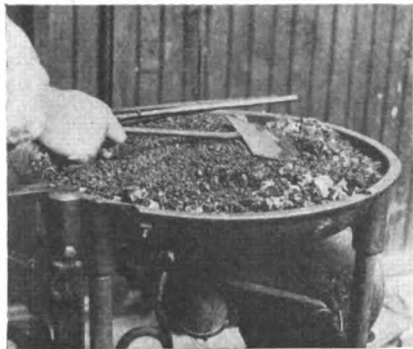
Turn Shorter Under a Load
A hand brake for each track.

Easy to Attach
Anyone can do it in an hour.

The Hadfield-Penfield Steel Co.
BUCYRUS, OHIO



gentle air blast. When enough coke is secured, it is shoveled to one side and a large block, the size of the intended fire, placed over the tuyere. Green coal is packed down at the sides, forming two mounds at either end of the block. Remove the block and start the fire between the two mounds, using the coke already made. The fire will spread until it reaches the limiting mounds, providing a long, hot fire.



Bank the Fire by Covering with Green Coal.

When a forge fire is left for any length of time, it should be banked. That is, the coke should be raked together into the center of the fire and the whole covered with green coal. A fire covered or banked in this way will keep alive for some time. It will also insure a good supply of coke for starting the next fire. If it is desired to keep the fire longer than ordinary, banking will hold it, a block of wood may be placed in the fire. The fire is then banked in the ordinary way and will often keep overnight.

A common fault of the beginner is to use too strong an air blast when heating a piece of metal for forging or welding. Any fire, whether of coal or other material, requires a certain amount of air to burn properly. As the fire burns, it uses up a part of the oxygen in the air. If too much air is supplied to a fire, not nearly all of it will be used. A forge fire needs a certain amount of oxygen to burn properly, but if too much is supplied the excess will attack the heated metal in the fire. This excess oxygen unites with the heated iron, forming a blue scale known as iron oxide. All metal is oxidized slightly when heated for forging, but the workman should try to regulate the forge fire so as to oxidize the metal as little as possible. The higher the temperature, the more easily does the oxide.

If the metal could be heated without coming into contact with the air, no oxide would be formed. Of course this is impractical in ordinary work, but if just enough air is used to make the fire burn properly, all of the oxygen will be used by the fire and the piece will be

heated practically as tho it were out of contact with air. However, if a strong air blast is used, the fire will not be able to use nearly all of the oxygen and this excess of unused oxygen will attack the metal. Particularly in welding, is it important that little oxide be formed on the material. A fire in which metals oxidize or burn, as it is sometimes called, is known as an "oxidizing fire."

A little experience will teach the beginner what size fire is best suited for the work at hand and how strong an air blast is necessary to get the best results without burning the metal.



Chicks Don't Roost on This Feeder

A POULTRYMAN, plagued with the persistent roosting of young chicks on the self feeders, remedied the trouble



Self Feeder Equipped with Wire to Prevent It Being Used as a Roost.

as shown in the illustration. The feeders are of large capacity, holding grits and other necessities and the broad ridge was tempting to the young birds.

The guards are made by fastening two uprights, one at each end, to project about one foot past the top. These were braced by a one by four-inch board and then a length of twelve-inch, close mesh wire drawn taut between.

The door opening into the compartments closes at a steep angle, offering no solace to a foot weary chick, and balancing themselves on the wire is out of the question.—DALE R. VAN HORN.



THE last census showed more than a half-million women farmers in the United States.



ONE way to help your community is to see to it that the boys and girls who have the inclination get to college.



"WHEN milk is allowed to work its magic for the human race we shall have citizens of better physique."

Eve Gets Blame For Wash-days

(Continued from page 44.)

she rests a bit and sings a little—and the washing is done quicker, she tells her husband proudly—and when it's all over she isn't tired, a bit—hardly; presently the roses creep back into her cheeks, husband is glad and there is joy and happiness all around, on wash-day, in the home where once there was only Blue Monday.

It's been a good job, getting rid of Blue Monday, with the electric washer. Then there's the electric iron to take away any ultramarine tint that might linger around ironing day, Tuesday; likewise, the electric vacuum sweeper to keep the atmosphere clear on sweeping day, the electric fan for relief in any hot weather and electric lights to shed their glow over the home, the year round. Electricity works for the household the whole year, in a variety of helpful ways. To some it helps more in this way; to others it helps more in that. To any household that has a family washing to be done, tho, electricity to run the washer renders a service that is second to none, from the standpoint of the housewife herself, in relief from hard work of a particularly disagreeable sort.



IN some households every member of the family does his share by returning everything he uses to its proper place in good condition.



HAS it occurred to you that eight hours of every day are spent in bed? The springs and mattress where we spend a third of our lives deserve attention.



EXPERMENTS show the wisdom of deep and early plowing for wheat.



MOSQUITOES are thick, but one sage remarks that it's better to be stung by them than by an oil stock shark.



CULLING time is a busy season on poultry farms, but results prove worth the effort. Feeding a boarder hen is throwing money away.



IF the heel of the loaf dries out so the bread cannot be served, grind it for escallops and croquettes.



THERE'S a best way even to dust: woodwork. Begin at one corner of the room and dust the baseboard; do the windows and doors as they come.

Here's Road Planing For You!

**An Ounce of Performance
Beats a Ton of Promise, and
the Pictures Here Show
PERFORMANCE!**

Here's a Wehr Road Maintainer shown in action on a road at Billings, Mo. It was bought by the Billings Special Road District and you can see for yourself the transformation it is making in the road.

The pictures tell the story better than any words. Here you see the sterling worth of the WEHR in RESULTS—in WORK DONE! Judge a road maintainer by *Performance*, and not promise, and you settle, decisively, on the WEHR!

WEHR Road Maintainer

Attached to Fordson makes a perfect one-man road maintainer for patrol or city street work. Quickly attached or detached, allowing the tractor to be used for other work. Cutting blade can be raised or lowered from the tractor seat.

More Evidence of Wehr Efficiency

*From Owners of Moose Jaw Race Track,
Moose Jaw, Ark.*

"With reference to work done on the Moose Jaw race track on May 23rd by your Fordson Tractor and Wehr Road Maintainer, we wish to state that we are thoroughly convinced that for this kind of work, it is entirely satisfactory and far superior to anything we have ever seen. Our track was in a deplorable condition, and we thought it was impossible to get it in shape again for racing purposes, having been neglected so long after the last rain. The surface was baked hard and very rutty; after one half hour's application of your machine, we were very pleasantly surprised to find the track in exactly as good condition as we desired. The ruts were planed down and smoothed over, leaving a cushion of from two to three inches on the surface, which is so necessary to horse racing. Our next work out on the following morning made us realize more than ever, the real value of your outfit as all horses without exception showed a great deal more speed.

"Thanking you for your good work, and assuring you of our confidence in the Fordson Tractor and Wehr Road Maintainer, we remain,
(Signed) J. W. BULAKA JOHN DYE
THOS. LITTLE J. N. McLEAN

*From Aldermen of Washington Park
East St. Louis, Ill.*

"We, the undersigned Aldermen of Washington Park, East St. Louis, Illinois, witnessed a demonstration made under the supervision of the Hill Motor & Tractor Co., this afternoon, May 8th, on Kingshighway and Hill Avenue, with a Wehr Grader-Planer attached to the Fordson Tractor, and under the conditions, must say that we were very much surprised with the work done. There were bumps of gumbo, as high as two feet and as hard as rocks, thrown out of ruts, and ruts two feet deep and two feet wide, and this little wonder machine leveled the bumps and filled up these places to our utter surprise. The outfit did as much work in three hours, as five teams of horses could do in a day, and summing up the cost, it amounted to almost nothing."

(Signed) P. J. DONAHUE L. P. WRIGHT
C. E. COOK WM. D. CRAIG
F. W. ADAMS R. H. GARDNER
H. S. DALLON

*Let us send you full description of the Wehr
Road Maintainer and tell you how you can
get demonstration without cost or obligation*

WEHR COMPANY
563 Thirtieth St.
Milwaukee Wisconsin



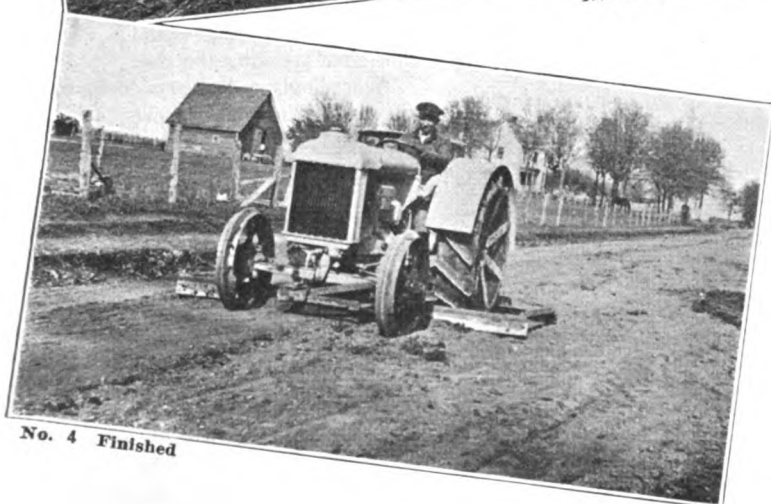
No. 1 Before Using Planer



No. 2 Half and Half

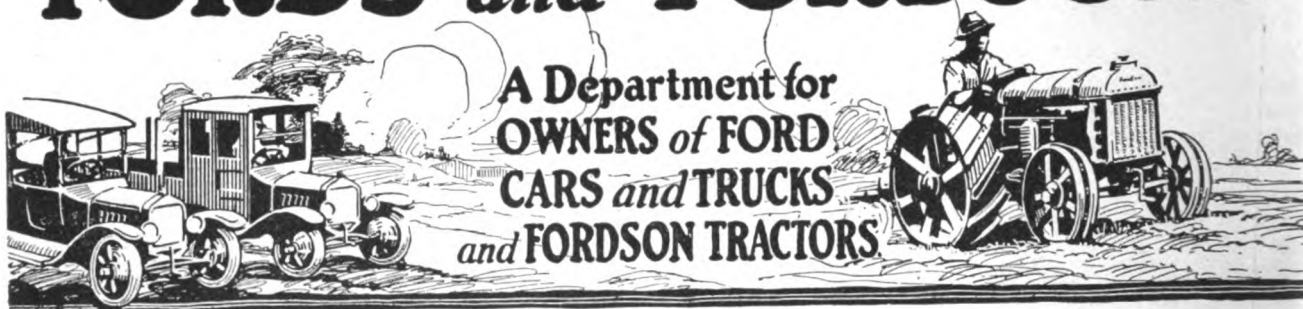


No. 3 Third Round



No. 4 Finished

FORDS *and* FORDSONS



Exceptional Fordson Feat

OUT in the northwest county of the northwest State of the Union, lies Lake Terrill, Whatcom County, Washington. To be exact, this was the case up to some two years ago, when the idea was conceived to reclaim the hundreds of acres of fertile land covered with from two to six feet of water. Steam shovels and crews of men were put to work cutting a mammoth channel from Lake Terrill to Terrill Creek, from which the waters of the lake were diverted into Birch Bay, Puget Sound.

Thus far the project proved entirely feasible, but here its promoters encountered difficulties. The waters of the lake disappeared, but the soil revealed, while equaling in richness and fertility anything in the entire world, was of such nature that it could not be tilled with horse power. In addition to its soft "peaty" consistency, in drying out it cracked in places to a depth of two feet or over. These cracks averaged up to twelve inches in width, which no horse could negotiate.

And so this great tract of land was allowed to lie idle for a period of around two years. Owing to its great fertility, it rapidly became overgrown with wil-

lows, "cat-tails" and other semi-aqueous plants. The growth of vegetation this year had reached to a height of about ten feet, was so dense that a person pen-

of the reclamation scheme realized that something must be done or the vast sum of money expended in draining the lake would be a total loss.

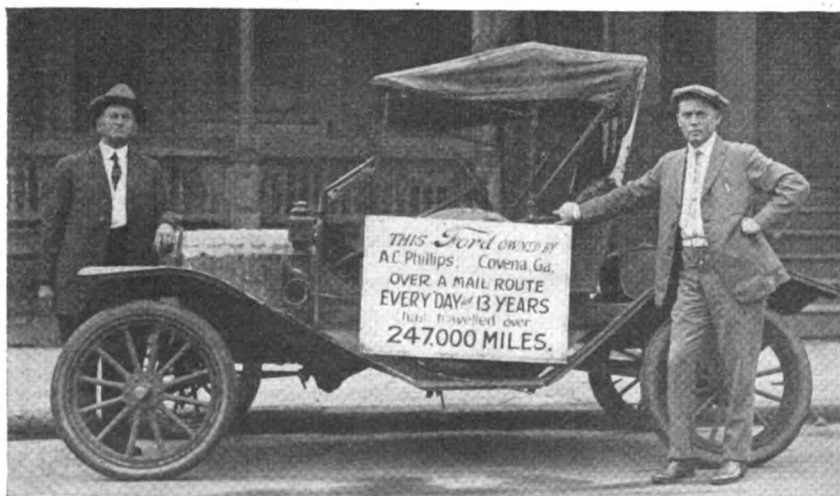


The Fordson Equipped with Mower Attachment at Work on the Reclaimed Washington Lake.

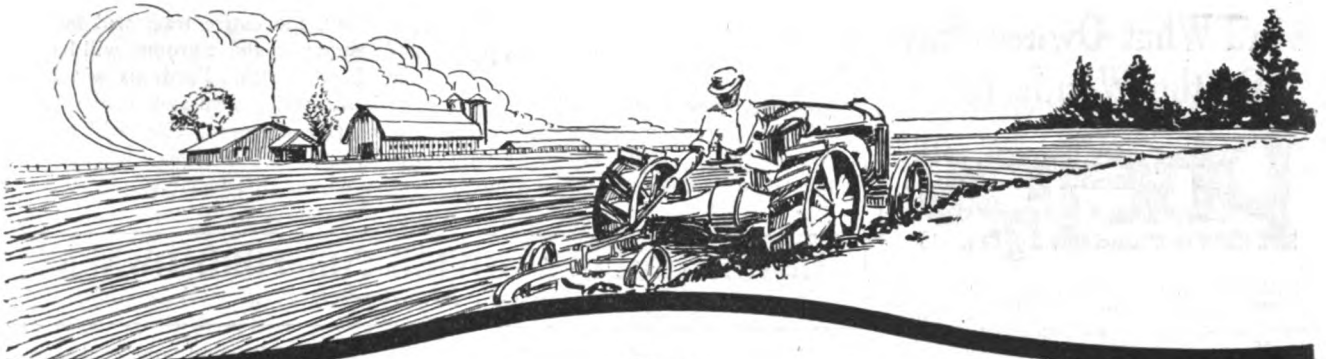
trating it to a distance of three feet was entirely hidden from view, and promoters

In this extremity the Diehl Motor Company, agents for the Ford products in Bellingham, Wheaton County, were consulted, with regard to the practicability of employing Fordson tractors in getting rid of the growth of vegetation and later breaking the soil.

Accordingly a Fordson equipped with extension rims and mower attachment was turned in to "harvest" the crop of wild growth. Willows, cat-tails and reeds up to above ten feet in height and up to a diameter that would just permit their entering the guards of the sickle bar were laid low by the Fordson and mower attachment. A number of times the tractor was stalled, owing to the fact that the land contained many upright stakes, driven there by fishermen when the land was covered with water. But thru it all the performance of the Fordson was exceptional. The tractor hurdled the cracks in the soil without difficulty; it ran over "boggy" spots, where the vibration of tractor and mower caused the ground to quiver and shake



C. A. Phillips (at the Left) Is a Rural Mail Carrier at Covena, Ga. He purchased this car in 1909 and has run it 247,000 miles. All the repairs that have been made are the replacement of one crankshaft and the pistons. On the day this picture was taken Mr. Phillips drove the car from Swainsboro to Atlanta, 224 miles, in 8 hours and 45 minutes.



Get
**Four Wheel Traction
 And Cushion Draw Bar
 On Your Fordson** All Patents
 Applied For

The Triangle Tractor Hitch is strongly built of steel. Not a casting in it. It is attached both to the front axle and the tractor draw bar, and pulling from two points increases many times the draw bar pull, putting the real stubborn pull into the Fordson.

In a daily demonstration at the Pageant of Progress a Fordson equipped with the Triangle Tractor Hitch, utilizing full motor capacity, a Governor insuring maximum motor power and the Miller Tractred wheels providing positive traction, the tractor loaded two large Baker-Maney wheel scrapers in hard ground without difficulty.

The two springs in the Hitch provide a perfect Cushion pull when starting every load, which is of great benefit to the Commercial Tractor; also acts as a shock

absorber, eliminating the sudden shock and strain to the motor, transmission or implement you may be pulling.

When the plow point strikes a solid object the springs eliminate the sudden shock and the wooden pin can be broken under spring compression, thus protecting shares and beams and insures longer life to the Tractor and implements.

Permits shorter turning without rear wheels coming in contact with drawn implements. Can be used for binder Hitch.

Makes steering easier in soft ground, climbing hills or pulling heavy loads.

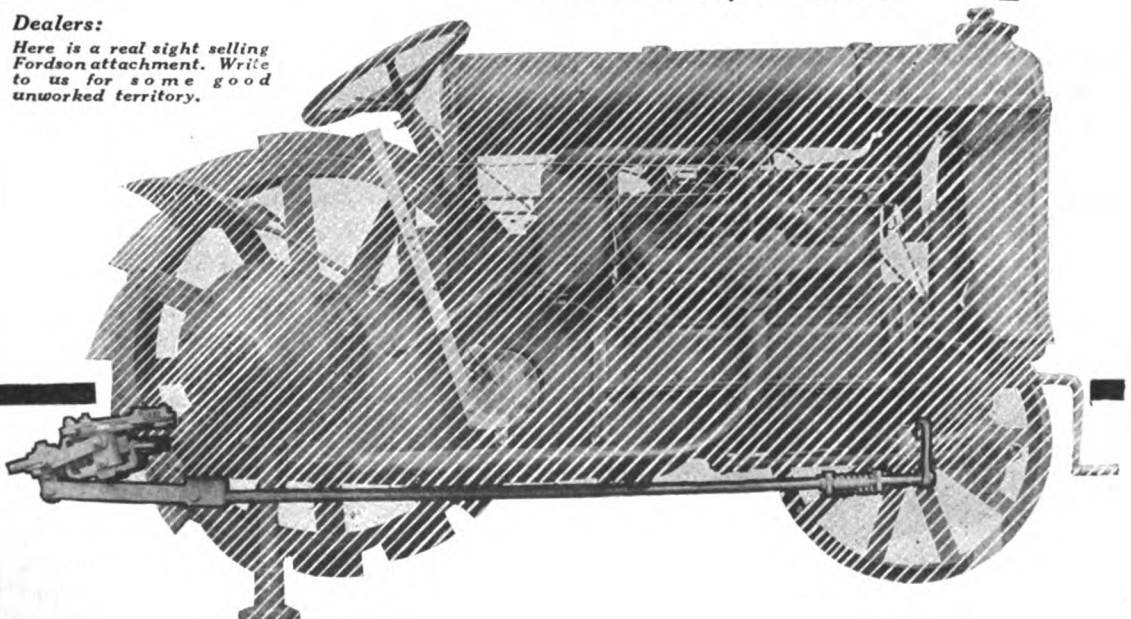
Nearly two years on the market has proven the Hitch an essential Fordson Attachment.

Draft and Traction Dept.

ROCKFORD MANUFACTURING CO.
 ROCKFORD, ILLINOIS

Dealers:

Here is a real sight selling Fordson attachment. Write to us for some good unworked territory.



Read What Owners Say Of the Wonderful

Phelps

Power and Light

"Phelps is simple to operate, dependable, economical"—ARCHIE HILES, Dunkirk, Ind.

"100% efficient and more simple than others"—MOORE BROS., Jackson Center, Pa.

"Put your prospects in touch with us"—GLENWOOD MINERAL SPRINGS, Chillicothe, Ohio.

"We wouldn't get along without it"—HENRY HOFF, R. 4, Saginaw, Mich.

"Only 2c a day for Phelps complete service"—RALPH WHEATON, Alma Center, Wisc.

"I cut my light and power bills from \$75.00 to \$8.00 per month with the Phelps"—LEO KRAMER, Hillsboro, Ill.

"Simple, easy to handle"—J. O. LARSON, Leonardville, Kans.

"Best plant made"—JOHN F. S. ZAIS, West-ernport, Md.

"Owned a Phelps 3 years and have never been without light a single night"—J. L. NOVAK, Allen, Nebr.

"Phelps is the ideal plant"—F. W. ROBBINS, Attica, N. Y.

WRITE FOR 2 FREE BOOKS

Learn how much happiness, comfort and rest Phelps brings to farm homes. Mail the coupon today whether you are thinking of buying a light plant right now or not.

To Dealers—Phelps dealers are successful. We help you find prospects and close sales. Get all facts. Write

Phelps Light & Power Co.

614 First St.

Rock Island

Illinois

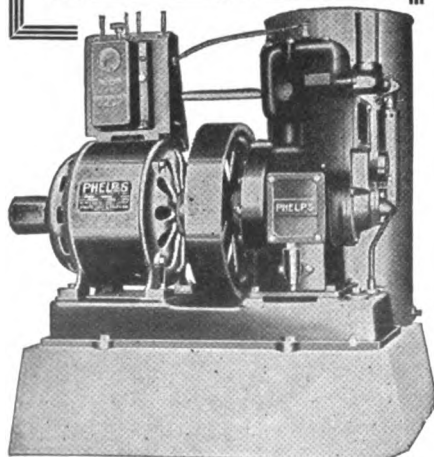
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614 First St. Rock Island, Ill.

☐ Send me your 2 free books
☐ Send me your dealer franchise facts.

Name _____

Address _____

Town _____ State _____



WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

for a radius of 100 feet or over, and it laid low the rank vegetation without effort.

Where no other means could have been employed, the Fordson tractor has accomplished the work—well. Later, as soon as the fallen "crop" has become thoroly

dried out, the entire tract will be fired and everything above ground will be consumed. After this Fordsons will break the land, cutting thru and turning under the roots and stubs. The yield of oats or other crops next year will pay the entire cost of the reclamation project.

MOTOR TROUBLE ADVICE FOR FORD OWNERS

By F. M. Service

Timing May be Off

TO THE EXPERT:

I have a 1918 model Ford which has gone bad and will not pull itself in high speed. The oil line gets stopped up occasionally and I put in an oversize piston in the front cylinder two years ago.

A few weeks ago I had to stop and let the motor cool before it would pull. I tore it down and found the oil line stopped up with pieces of carbon. I cleaned the entire motor with gasoline and took up the main and connecting rod bearings and put in new rings. I had to pull it with a team to get started, but it ran well while I had the hind wheels blocked up or it would run on level, solid roads, but still it would not pull.

A garage man told me that I needed oversize pistons, so I got .005 oversize pistons and another set of rings and put them in. I had to grind the cylinders with emery dust to get them to fit.

I jacked up the rear wheels and let it run for an hour or more. I have driven it about 25 miles since then and I can't get any power. At slow speed (five miles per hour) there is no exhaust, but at about 15 miles per hour the exhaust is rather loud. It won't run faster than 15 miles per hour. I open the throttle wide and put the spark up, but there is no pull—it only slows down and dies.

In slow speed it seems to run all right, requiring no more gasoline than it used to, but when the throttle is opened in low it does not run only just so fast. It does not miss but hits on all explosions.

I cleaned and dried the float and shel-laced it, thinking it floated too low, but I would think if it was that trouble it would miss firing occasionally. I have ground the valves and adjusted the stems so a piece of paper will easily go under them. I did not have the cam-shaft out or bother the timing gears. I do not think it is ignition trouble, for there seems to be a strong spark.

Do you think the valves are the trouble or the valve springs too weak? It does not miss. Do you think the compression is not great enough and do you think the pistons and rings being new would let the power go past them? The

engine idles all right and the pistons show no inclination to stick, although they were tight when I put them in.

Would it be better to use a heavier oil? Do you think it would remedy the case if I would jack up the rear wheels and let it run a half day and use heavy oil, or is the trouble in the carburetor?

It seems to have more pep when it is cold than when it is hot. I generally have to jack up a rear wheel to start unless it is warm. When it is hot there isn't very much compression, but I cannot hear it leak anywhere. But any machine turns easier when hot than when cold.—WALTER C. HAYNES, Sway-zee, Ind.

Answer—There is no question but what you have done all the work necessary to put your motor in good shape. and from the description you give in your letter we believe you have done the work right. Your trouble is simply a case of either the valves or the ignition being out of time. It is possible that when the overhauling was being done the crank shaft was in some way lifted up and the teeth of the timing gears shifted out of their correct mesh.

To check this up, remove the cylinder head and turn the motor over with the crank until the first piston is at top center on the compression stroke, then place a ruler on top of the piston and allow it to go down with the piston as the motor is turned. When the piston has gone 3 11/16 of an inch, measuring from the top of the cylinder wall, the exhaust valve should just start to open. The piston is then 5/16 of an inch from bottom dead center. If the exhaust valve does not just start to open, it will be necessary to remove the front cylinder cover and take out the big timing gear. Then turn the motor over and turn the camshaft until the gears will mesh so the tooth marked zero on the small gear will come between the two teeth on the large gear at the zero point. Now be sure that when the large gear is in place on the cam shaft the first cam points in the direction opposite to the zero mark on the gear.

If the valve timing is found to be all right, try advancing the spark farther by bending the spark rod, connecting

the timer shell to the steering post. To do this, grasp the rod at the part where it is curved and pull up. When the spark is in its correct position, the projection that holds the spark rod on the timer shell should be just to the left of the fan, adjusting screw casting on the timing gear cover when you stand in front of the engine and look down, and when the spark is in its retarded position on the quadrant.—F. M. SERVICE.



Ford Lights Weak

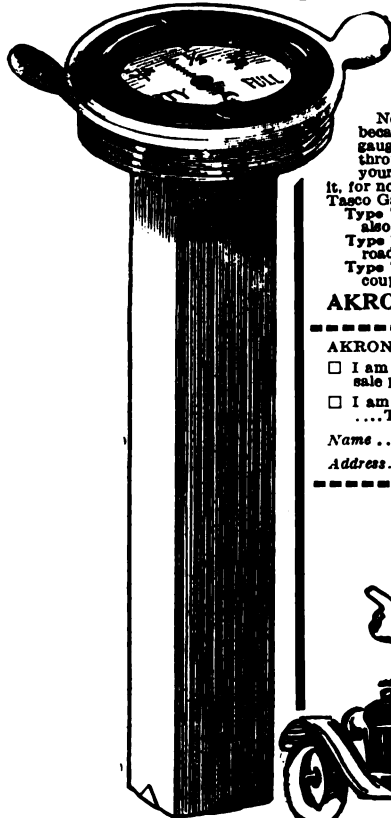
To the Expert:

My father has been a subscriber to FARM MECHANICS paper nearly a year, and can say that I like it fine, especially the Motor Trouble Advice, by F. M. Service, which I am mostly interested in. As I have a 1918 model Ford, of which good care has been taken, I would like to get advice regarding my headlights, driven by the magneto. It seems that I do not get a steady light. If I have a good light the moment I hit a bump or a rock it seems to cut off the current so that I get just a poor light for a while, and the same way when I have a poor light, the moment I get a jar or a bump I get good light again. The wiring is in good shape and so are all connections. I have better lights going up or down hill than on the level; also it seems that I have better light driving fast in high than when driving in low speed, and the moment I slip it into low from high it cuts off the current so I barely have a little light for a moment.

I am using only 6-8 volt 21 C. P. bulbs. My Ford seems to run fine when driving real slow on country roads when it has a little load or so much that it has to pull a little, but when I get on the paved streets, so the car nearly goes itself, it starts jerking when driving real slow. I have to put it in low when the motor runs real slow, and when idle it works like a clock.

My car is pretty hard to start in cold weather. It seems it is not able to get the gas up, altho it seems to have plenty of suction and has good compression. It starts easily when the motor is run so it is warm. Have been planning on putting on an air friction carburetor, or would you advise me to get another make of carburetor that you would consider a better one?—CLARENCE N. VICKS, Decorah, Iowa.

Answer—It would appear that the trouble with your lights is in the socket or switch connections, as there is nothing in the Ford magneto that would be affected by the car hitting a bump, etc. The fact that when you go into low speed you also have this trouble, would



\$1.25

Out of Gas Again?

Go to your Dealer and get a Tasco Gauge for your Ford or Chevrolet "490"

Nearly all of the Ford and Chevrolet dealers have them now because of the low price and great demand for a practical gas gauge. All you have to do is unscrew the tank filler cap—throw it away—and screw in the Tasco Gauge. Throw away your measuring stick too if you haven't already broken or lost it, for now all you have to do is raise the cushion and there's the Tasco Gauge to show how much gas you have.

Type "A" is used on the old style roadster with round tank, and also on the old style touring car.

Type "B" medium length, is used on the new touring car and roadster with oval tank.

Type "C" short length, is used on the square tank for sedan and coupe, also Chevrolet "490".

AKRON SELLE CO. - - AKRON, OHIO

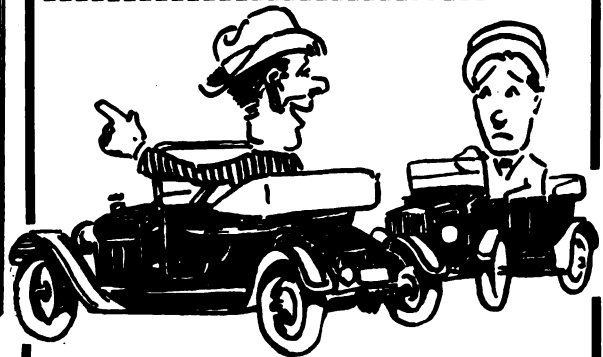
AKRON SELLE CO., Akron, Ohio

☐ I am a dealer. Send me one dozen TASCO GAUGES at wholesale price. Dealer.....Jobber.....

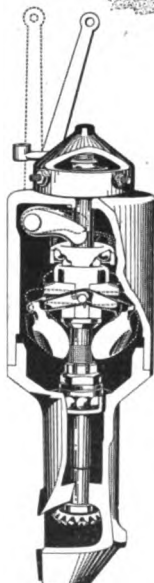
☐ I am not a dealer. Send me one TASCO GAUGE TYPE A,TYPE B,TYPE C, for which I have enclosed \$1.25.

Name

Address



HOW MANY SOILS ARE IN A FURROW



IN no field are soil conditions constant. The pull of the tractor varies many times in every furrow due to changing soils. One furrow may have clover sod, clay, sand, gumbo, loam—all of which require a different pull from the tractor. It is the business of the STANDARD GOVERNOR to smooth out such difficulties.

The STANDARD GOVERNOR will cut repair costs, decrease fuel costs, prolong the life of the Ford Truck or Fordson Tractor, and pay for itself many times over by increased efficiency in field and road work.

The STANDARD GOVERNOR has many points of mechanical superiority. Because of its all 'round high quality, it cannot be sold for a price as low as the prices set on inferior makes. It does everything that a good governor is supposed to do and it performs those duties efficiently, economically and lastingly. It is very easily installed.

The automotive dealer who is not selling his share of Standard Governors is passing up an opportunity in his territory. The Standard Governor is a fast selling device that gives the dealer a quick turnover and gives the truck or tractor owner lasting satisfaction. Write us today for prices and further information.

KOKOMO BRASS WORKS, Kokomo, Indiana

New York, 245 W. 55th St.
Chicago, 1430 Michigan Ave.

BRANCHES:

San Francisco, 32 Van Ness Ave

Detroit, 4610 Woodward Ave.
Boston, 15 Jersey St.

STANDARD GOVERNOR

Alloy Steel on the Farm

CHAPTER VII

Cold Weather and Automobile Springs

Automobile and motor truck "Spring Troubles" are usually greatest in winter.

Intense cold tends to make steel brittle. Hard, frozen roads multiply the shocks to be overcome by the springs.

No steel can forever stand up under continued punishment; but ALLOY Spring Steel, properly made and heat treated, will greatly outlast ordinary carbon spring steel.

The wonderful endurance of the Ford, with its Alloy Steel springs, is a sufficient proof of the advantage of Alloy Steel in automobile building.

As a safety measure, it is wise to protect yourself against breakdown this winter by having old springs replaced with springs made from Interstate Alloy Steel.

And when you buy a new car (passenger or commercial) insist upon a make in which ALLOY STEEL is used in every vital part—and especially the springs.

The same advice applies to important parts of farm implements. All forged parts, such as pinions, small gears, pitmans, connecting rods, crankshafts, etc., should be formed from ALLOY STEEL.

Discuss these important facts with your automobile and implement dealers and suggest that they write to the manufacturers.

Interstate Iron & Steel Co.
104 South Michigan Avenue
Chicago

bear this deduction out, as there is considerable vibration in the car at low speed and it is probable that the pieces of metal making the contacts in the lamp sockets or switch are so badly worn or corroded that they barely touch and when any extra vibration or jar is given the machine they do not make a clean contact.

To prove that the trouble is there and not in the magneto, connect up a small voltmeter to the wire running from the magneto plug to the coil box, and watch the needle. As the car is driven over rough roads, you will find that the needle will only vary when the motor speed is changed. However, your magneto is weak or you would burn out the 6-8 volt bulbs you are using. A Ford magneto should develop about 18 to 20 volts at a speed of around 20 miles per hour. This weakness is generally caused by one of two things:

First. End play in the crank shaft, which allows the flywheel with its assembled magnets to get too far away from the stationary field coil. This end play can only be taken up by replacing the rear main bearing cap with a new one. When the end play has been eliminated and the flywheel properly set, the magnets should just clear the field coil by 1/64th of an inch.

The second cause of magneto trouble is a ground in the ribbon wire, with which the stationary coils are wound. There are 16 of these and if any of them become grounded it will cut out all the ones in back of it, consequently cutting down the current proportionately.

The hard starting and the jerking when the car is running slowly in high is no doubt caused by the weak magneto, and before you change your carburetor, etc., take down the motor and repair the magneto, so it will throw its correct current. If this is done you are pretty certain to find all your troubles solved.

Should you decide to do this work, we will be pleased to furnish information as to the method of testing and repairing on request.—F. M. SERVICE.

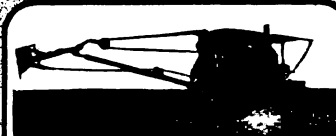


Grease Leaks Into Ford- son Crank Case

To the Expert:

In your last month's issue, in the F. M. Service Department, I saw the article about a Fordson tractor having trouble with the grease leaking into the crank case from the transmission. I have the same trouble. I have had my dealer order me a new plate, but it isn't any different than the old housing plate that is in the tractor.

Our dealer does not seem to be aware



MAKE MONEY DIGGING CELLARS AND DITCHES or GRADING ROADS with a KEYSTONE EXCAVATOR

We can put you into a contracting business that is not crowded and worked to death, where your only competition is hand labor at four times the cost.

Only a small amount of capital is needed. The machine will pay for itself in a season's work and pay you steam-shovel operator's wages and a good profit besides. Our demonstrator will teach you to run it in a few days.



The Keystone Model Three is Light, Portable, Low Priced and can be equipped for all kinds of excavation jobs with three different buckets

Skimmer, Ditcher and Clamshell. Get ready to cash in on the Building Boom. Ask for catalog and our "Proposition to Cellar Diggers"

Keystone Driller Company, Beaver Falls, Pa.

Increase Your Income

A SMALL investment in a *Utility Shovel Mixer* and *Utility Moulds* will start you in a business that will make big profits during your spare time

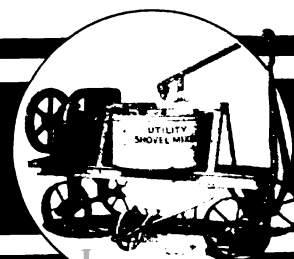
Reduce Your Own Building Costs

There is no reason for putting off the improvements you need. *Utility Equipment* keeps cost way down on all kinds of concrete work.

Catalog, price and complete information on request. Don't pass up this opportunity. Write:

Concrete Equipment Co.

600 Ottawa Ave.
HOLLAND, MICH.



UTILITY SHOVEL MIXER

of the fact that Ford makes a new style plate that is to overcome this trouble. Could you just describe what the difference in the new and old style plate is, and when ordered must it be especially mentioned?

Is it all right to use a muffler such as advertised by a well-known company? Does it affect the power any, and heat the motor?

Have been a reader of your magazine only since last February, and must say it is as good and better than the mechanical magazines that I have read.—H. W. BLESS, JR., Wells, Minn.

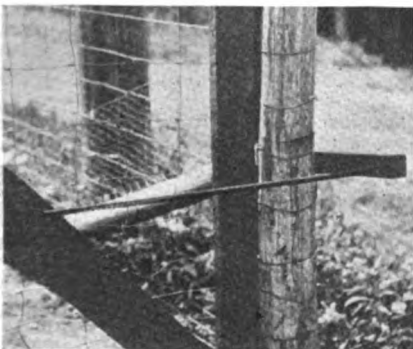
Answer—In the earlier Fordson tractors the transmission plate was plain and the oil leaked past the transmission drive shaft, where it went thru the transmission plate, but for the past two years the plate used in the tractors has a baffle ridge cast on it that catches the grease or oil as it is thrown around and prevents it from reaching the transmission shaft and passing past the bearing.

It is perfectly all right to use any of the well advertised mufflers on your tractor, as the effect of the small amount of back pressure produced by them on the exhaust is negligible.—F. M. SERVICE.



Self-Closing Small Gates

IT is usually something of a problem to know how best to hang a small garden or poultry yard gate so that it will be self closing. The too common method is to support a weight on a cord, one end of which is attached to the



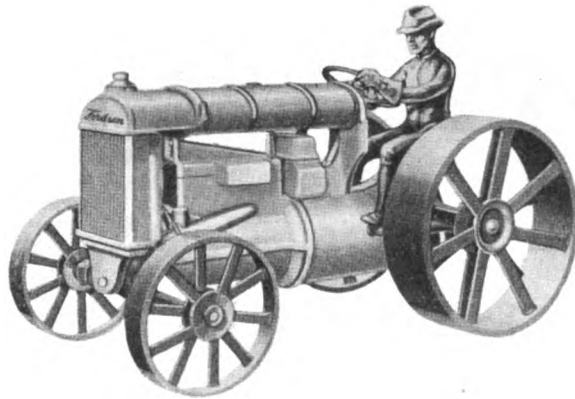
This Gate is Closed by the Spring.

gate and the other to a stationary object.

A better method is shown in the illustration. It consists of securely nailing a short cleat to the hinge post so that one end projects about eight inches. A light screen door spring when fastened to this and to the brace of the gate gives positive action against any wind, yet is easy to open and absolutely self-closing.

The arrangement shown may be varied to suit different conditions.—DALE R. VAN HORN.

Hire This Salesman For Fifty Cents a Year!



The best Tractor salesman ever! A 6-inch model of a real Fordson Tractor, complete in every detail. Weighs $1\frac{3}{4}$ lbs., is made of cast iron, brightly painted and practically unbreakable. Front axle mounted in rocking swivel—permits tractor to follow an uneven path—like its big brother.

Use Toy Tractors in your business.

When your live prospect tells you he will "think it over," leave a Toy Fordson with his kids.

See that your local Toy, Department, General and Drug Stores order a supply and that they sell 'em fast through window displays.

Dress up your own display room during Fair Week, Home Comings or Conventions!

During Ford Week decorate your tractors and Ford Cars and windows with these toys.

The Toy Fordson is *YOUR* biggest advertisement. See that every kid in *your* locality has one.

Write quick today for samples!

ARCADE MANUFACTURING CO.

Freeport, Illinois

Manufacturers for Over Forty Years of the Arcade Line of Cast Iron and Novelty Toys

LIKE SWEET CIDER?

You can make purer—sweeter and cleaner with a
FREEMAN CIDER MILL—

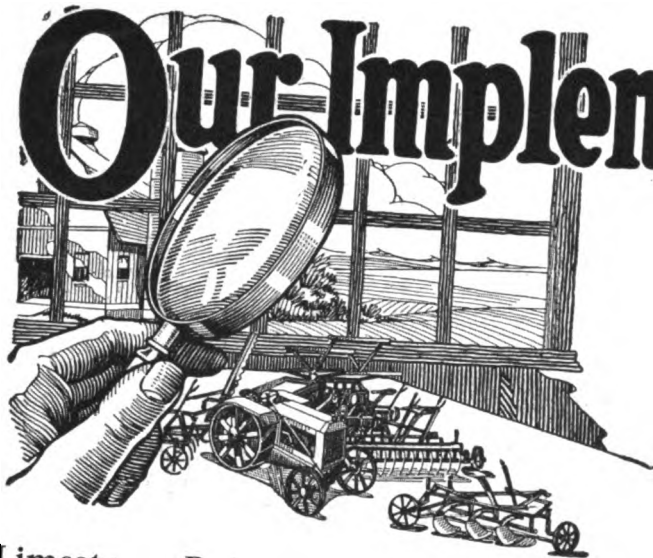
because it is fitted with natural hard wood rollers—that do not discolor or make the cider unpleasant to taste.

WRITE TO US FOR A FOLDER OF OUR
LATEST DESIGNS AND PRICES

FREEMAN MFG. CO. RACINE, WIS.



Our Implement Inspector



HE finds much new and worth-while farm equipment offered to increase efficiency and cut down labor.

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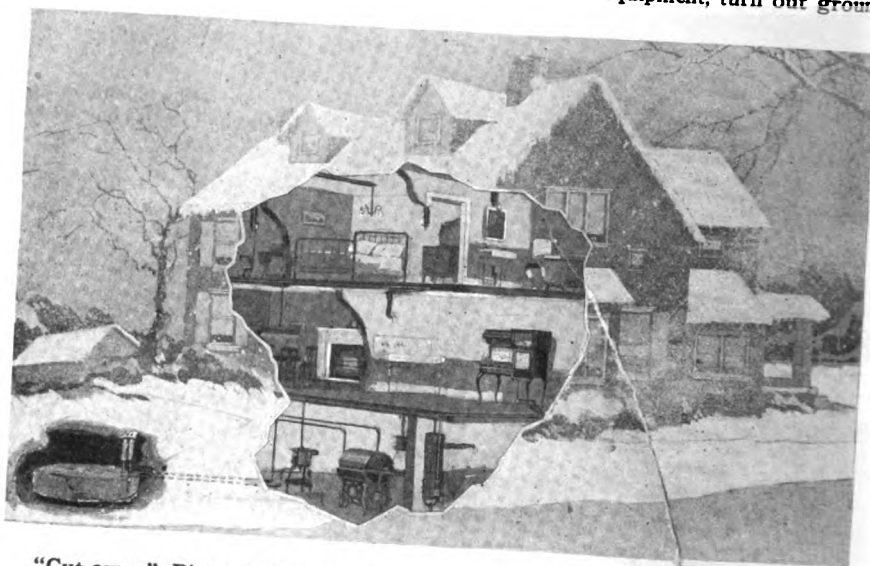
Limestone Pulverizer for Fordson Tractor

THE value of legumes as fertility builders and the need of ground limestone to get maximum production of legumes have brought the limestone pulverizers into general use among farmers who have a supply of limestone on their places or nearby. A pulverizer coupled with the tractor for power provide their owner with a plant that is profitable to operate.

Shown in the illustration is a pulverizer that with a Fordson tractor will turn out from two to three tons of

limestone for agricultural purposes per hour. The opening of the hopper is $4\frac{1}{4}$ by 12 inches and will take any stone that

ment and for the labor. Two or more neighboring farmers join together to purchase the equipment, turn out ground



"Cut-away" Picture Showing Gas Plant for Farm Home Installed. The carbureter is underground outside the house, while pressure is provided by the tank in the basement.

will pass thru that opening. The stone is crushed and pulverized by three swinging hammers of manganese steel, which have smooth faces. These hammers are reversible and when worn on one side may be turned over in a few minutes' time. The screens also are made of specially tempered steel and when they wear down may be reversed. The fineness of the stone is regulated by the screen bars, which are adjustable from $\frac{3}{32}$ of an inch to 2 inches. The machine runs at a speed of from 1,400 to 1,500 revolutions a minute.

Limestone "rings" have been formed in many communities and have earned good profits on the invest-

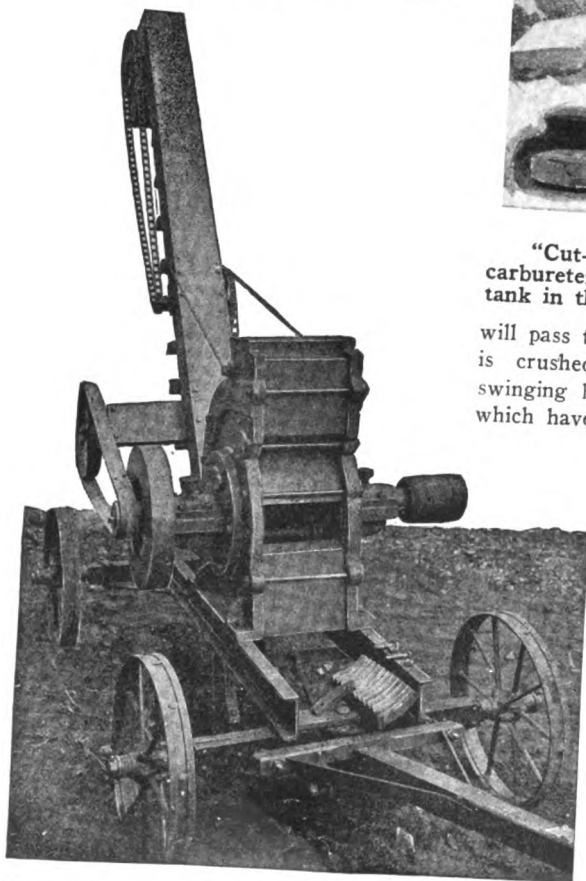
limestone and sell to others in the community.



Gas for the Farm House

A CONSTANT, steady supply of gas that makes a clear hot flame may be secured for the home where there is no artificial gas supply. The illustration shows the plant installed in the home. Outside the house there is a carbureter, connected with the operating mechanism in the basement of the house. One filling of the carbureter will supply gas for cooking, heating or lighting for the average home a year.

The gas the plant manufactures is made of 85 per cent air and 15 per cent "casing head gasoline," which is liquified natural gas. Two pipes lead down to the carbureter, one each to the upper and lower cells where the fuel is poured in. Two other pipes lead to the house—one



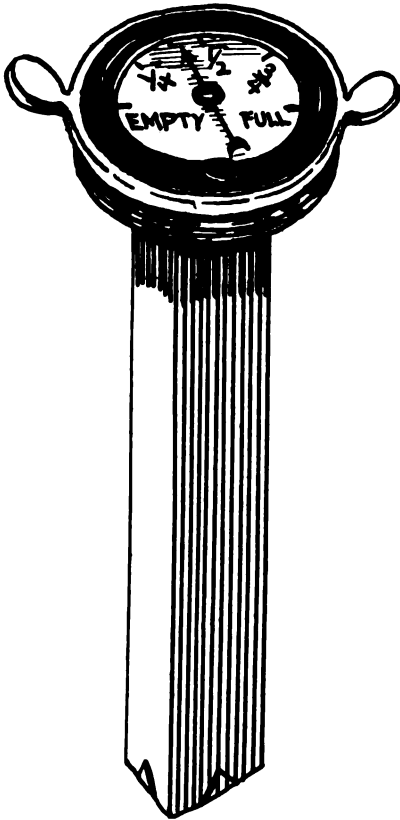
End View of Pulverizer of Proper Size for Fordson Tractor.

to the compressor and the other for gas to supply the house. The compressor automatically forces air thru the carbureter, charging it with a certain amount of vapor from the gasoline, and by pressure forces it thru the pipes in the house to the equipment that uses it. The compressor is driven by a weight, which is wound up about once a week.

A plant such as this supplies the farm home with gas for all the uses to which artificial gas is put in the city homes. It may be used for light where there is no electricity; for the cook stove in the kitchen; for the water heater that will supply both sink, wash stands and bathtub; for ironing, the laundry and all the other conveniences.

Ford Gas Gauge

A DEVICE by which the owner of a Ford car can tell at a glance just exactly how much gasoline there is in the tank has been placed upon the



Gauge that Replaces Cap on Ford Gas Tank and Tells How Much It Contains.

market. It is a gauge mounted on a stem, which acts as a float chamber. This stem is placed in the gas tank, the top being fitted with threads so that it replaces the standard tank cap. As the gasoline lowers in the tank the float operates the gauge showing the amount the tank contains. This indicator does away with the measuring stick and all the driver has to do to tell the condition of the tank is remove the seat cover and look at the dial of the gauge.

YOUR OWN WORK—AND GOODYEAR BELTS



Copyright 1922, by The Goodyear Tire & Rubber Co., Inc.

Ask any farmer who has just finished his threshing with the aid of a Goodyear Klingtite Belt what he thinks about Goodyear Klingtite Belts in heavy duty.

He will tell you what George Saunders, of Stratford, South Dakota, and hundreds of other farmers the country over know from personal experience.

"I have used many belts in my 15 years of farming," says Mr. Saunders, "and I can assure you the Goodyear Klingtite Belt gives less trouble in lagging on the pulleys, needs no breaking in, runs freer, requires no belt dressing, works perfectly in any weather, and always delivers full power."

Goodyear Klingtite Belts will be just as reliable, trouble-free and economical in your service. They are made in endless type for threshing, silo-filling, feed-grinding, wood-cutting and other heavy duty, and in suitable lengths for the lighter drives, like churning, cream separating, water pumping, wash machine and electric light plant drives.

Goodyear Dealers everywhere, and many progressive hardware merchants, too, sell Goodyear Klingtite Belts. For further information about these powerful, long-lived belts, write to Goodyear, Akron, Ohio, or Los Angeles, California.

Goodyear Means Good Wear

GOODYEAR
KLINGTITE BELTS

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS



Try My Shaler!

No tool-kit is complete without a Shaler 5-Minute Vulcanizer. It is a necessity and the greatest convenience ever offered to the motorist.

Why take chances with cold patches when you can make a heat-vulcanized repair that will "stick"—even outlast the tube—in five minutes?

The Shaler 5-Minute Vulcanizer is easy to use—you need only a match. Always ready—never bothered by wind or storm. Cannot injure or burn the tube. No gasoline—no danger of fire.

Get a Shaler 5-Minute Vulcanizer from your dealer. It will soon pay for itself by the saving in time, trouble and tire repair bills.

Complete Outfit \$1.50

Slightly Higher in Canada and West of the Rockies

The outfit includes the vulcanizer, 12 Patch-&-Heat Units (6 round for punctures and 6 oblong for cuts)—ready to use—with complete instructions. Extra Patch-&-Heat Units 75 cents a dozen.

C. A. SHALER CO.

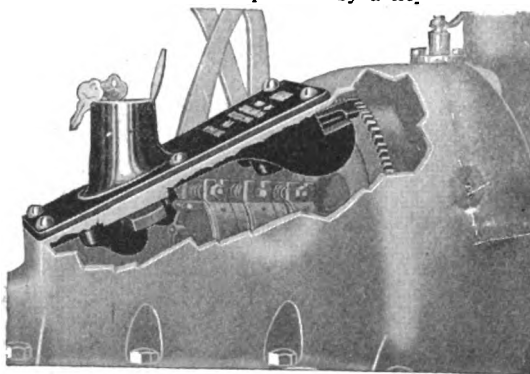
2262 Fourth St., Waupun, Wis.



WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

Ford Transmission Lock

A LOCK that will make it difficult, if not impossible, for a Ford car to be stolen, consists of a transmission case cover which has on its under side a forged steel bolt and an iron cross bar. The bolt and bar are operated by a key



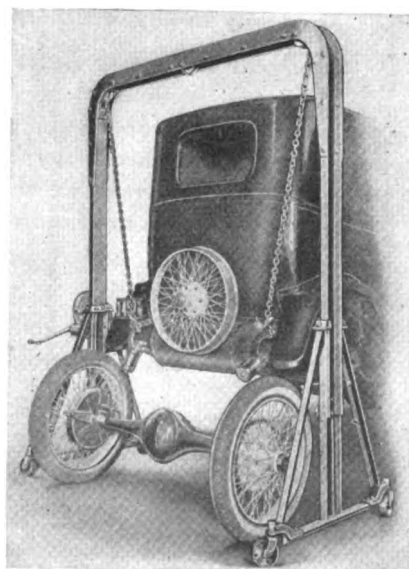
Lock that Keeps Ford Safe from Thieves.

that turns in a locking cylinder which projects above the floor board of the car near the foot brake pedal. When the key is turned the bolt moves forward and engages the teeth of the fly-wheel, while the cross arm slides under the sides of the transmission case opening. This makes it impossible to start the motor or remove the lock. The lock is shown in the accompanying illustration. The lock is easily and quickly installed as it takes the place of the regular transmission case cover. It is easy to operate and the keyhole is conveniently reached from the driver's seat.



Auto Hoist for Garage

LIFTING up a car rather than getting under it is the practice in repairing automobiles. To lift up the car, a hoist that has many excellent points is shown



Hoist Holding Up Rear End of Limousine.

in the illustration. This hoist will lift either front or back end of any type of automobile, can be used to hoist out the engine and is so designed that it is adjustable in heights and can be easily moved from one point to another.

The frame of the hoist is constructed of 5-inch channel steel with the arch reinforced on both sides by heavy steel plates, $\frac{3}{4}$ by 4 inches. The lifting chains are extremely heavy and are tested to undergo strains far in excess of the recommended capacity of the hoist. The frame is mounted on casters 5 inches in diameter and have full roller bearings. The theoretical lifting leverage is 200 to 1. The arch is adjustable from a minimum height of 7 feet 6 inches to 9 feet 2 inches. The width between the frames

is 6 feet 4 inches. The recommended lifting capacity of the hoist is 3,000 pounds.

The hoist requires very little floor space. Its design permits it to be operated in cramped quarters. It can be run into position over a car from either front or back without requiring more than 12 to 16 inches space on either side. The minimum elevation of the frame permits it to be run thru the average door, so that the hoist can be taken out of the garage into the yard when necessary.

The worm drive hoisting mechanism not only supplies enormous lifting leverage but makes it impossible for the load to be accidentally released.



Air Cushion Springs For Automobiles

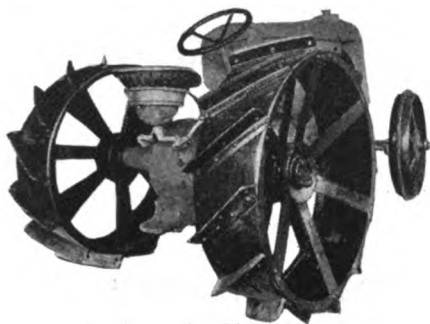
RUTTY roads are hard on automobile springs, and harder on the occupants of the car. A new method by which these jars and jolts will be absorbed and which eliminates the use of steel springs has been devised. The accompanying illustrations show the device in place of the rear springs of a Ford



Air Cushions on Back Axle of Ford Car.

touring car and under the seat of a Fordson tractor.

The air spring consists of an inner tube, enclosed in a heavy fabricated rubber cushion and the whole set into a metal case, much like a cup. The inner



Air Cushion Seat for Tractor

tube is filled with air, much the same as an automobile tire, the pressure being determined by the weight that it is to support.

While this is a new device just placed on the market, the manufacturers claim that it has been thoroly tested and will withstand the wear to which it is subjected.—A. P. C.



Safety Wringer

THAT there is no longer any re-sewing of buttons after wash days seems almost unbelievable; but we at last have an unusual wringer, one that cannot break, crush nor tear off buttons, that cannot crush hooks and eyes.

You can run your hands right thru the wringer rolls without pain or injury.

In this new wringer light and heavy pieces can be wrung at the same time.

These unusual qualities are due to the three-inch rolls, especially the upper one which is made of pure gum of a special compound which conforms itself to the irregularities of any gar-



Wringer with Pliable Rolls, Thru Which Hands May Go Without Damage.

MEN WANTED

write today to the
SWEENEY SCHOOL



NOW I will guarantee a real job to qualified SWEENEY Graduates. Learn the Auto and Tractor business. Learn a trade. Eight weeks' course leads to employment. Free Railway Fare to Kansas City. Wonderful offer to you from World Famous Million-Dollar Trade School. Radio Course FREE.

Young man, the only difference between a rut and the grave is that the grave is deeper. I say, get out of the rut. Do the work you like. Be independent. Learn a trade. Be a mechanic. Get into the auto business. You can earn big money. You can travel and see the world.

I have helped 50,000 men to success. This Million-Dollar trade school is the greatest success factory you ever saw. The way to learn is easy. You don't need any experience. I teach with tools not books. You learn your trade by actually doing the work.

You have a right to make a success of your life. Make a start now. I'd like to show you what thousands of men just in your position have done as a result of the Sweeney system of practical instruction. It's a shame for you to stick in a rut or work at jobs you don't really like.

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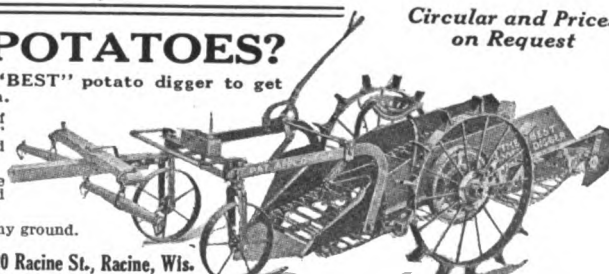
Then You'll need a "BEST" potato digger to get them all fast and clean.

Built soundly, mostly of steel, yet light, the "BEST" potato digger is easily pulled by two horses.

Shovel is 22 1/4 inches wide—can be raised or lowered from the operator's seat.

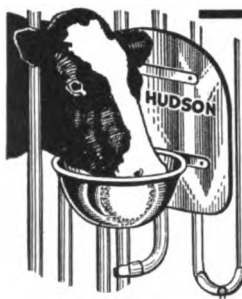
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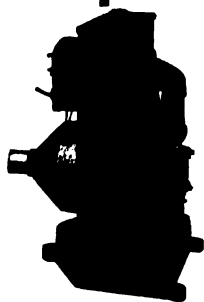
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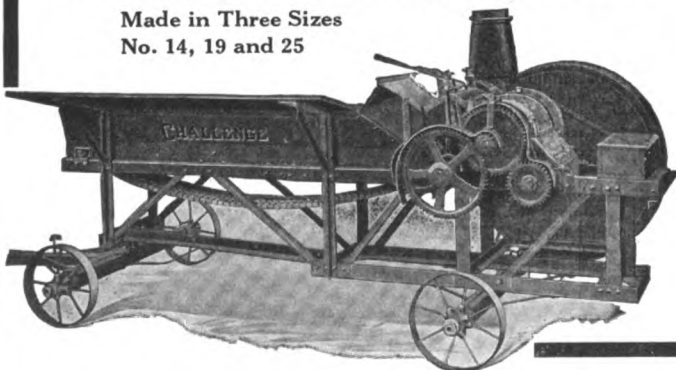
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The rolls are self-cleaning and the entire construction of the wringer is without cogs or gears.

It is equipped with a reversible drain board which automatically locks itself in position and cannot crawl.—Dora Gross.



Slide for the Children

TO make the slide shown in the illustration begin by selecting four pieces of wood, each 5 feet and 7 inches long, 6 inches wide and 4 inches thick, to use as supports at the high end of the slide. Taking two of the four pieces, you fit them together firmly at the top, while



"Ain't We Got Fun?"

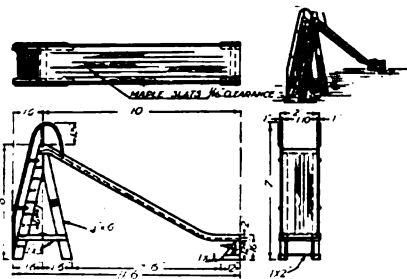
placing their lower ends 4 feet apart so as to form a triangle with the ground as the base. With the other two pieces you do the same.

Next you provide a rung for each triangle—to be precise, a rung 2 feet and 7 inches long by 3 inches wide and 1 inch thick—and nail it on about 4 inches above the ground. When finished, the braces are ready to be set parallel to each other 1 foot and 10 inches apart. Across the top—that is to say, from the tip of one triangle to the tip of its mate—you nail a hardwood board 2 inches wide and 1 inch thick.

Now for the front supports. Both are to be triangular. You choose for each of them a board 16 inches long by 3 inches wide and 1 inch thick, and then two additional boards 12 inches long by 3 inches wide and 1 inch thick. With these you make a pair of right triangles

which you set parallel to each other 1 foot and 10 inches apart, with the right angles toward the front or low end, and so placed as to leave a space of 7 feet and 6 inches between the front of the back braces and the back of the front braces.

For the chute itself, you need seven maple boards, the hardest obtainable, and measuring 11 feet 6 inches long by 3 inches broad and $\frac{1}{2}$ inch thick. Prepare them carefully, with special attention to the grain, which must run down. In fastening them on—placed lengthwise, of course, and leaving cracks $\frac{1}{16}$ inch wide—you use dowel pins. On the bottom, a few inches from the end, you screw a cleat 1 foot 10 inches long by 2 inches wide and 1 inch thick. Two additional cleats of the same dimensions



Plans for Slide for the Children.

are needed; one goes on at the lower end, the other half-way up the slide.

Now you bend back the top of the slide a little, a short way from the end, so that it will fit over the crosspiece which connects the braces. In order to bend the maple easily, you either steam it or saw the wood half thru underneath the part to be bent. Then you fasten it firmly with screws. You also bend back the slide at the bottom, about 2 feet and 5 inches from the end, so that the cleat will rest across the top of the small braces, where you make it fast with screws.

You build the sides of the slide out of boards 11 feet, 6 inches long, 4 inches wide and 1 inch thick, bending or fashioning them at both top and bottom to suit the bend in the slide, and nailing them to the top and bottom braces. You round them carefully where the children's hands rub along.

Finally, you provide for the steps and handrail up the back of the top brace, making eight wooden steps at intervals of 6 inches and measuring 1 foot and 10 inches long by 6 inches wide and 1 inch thick, while the handrail consists of a galvanized iron pipe, 9 feet high and $1\frac{1}{4}$ inches thick, bent into the proper shape and attached with short braces as the diagram shows.

All is now ready for a squeeling, giggling cascade of joyous urchins, sliding madly—such a vigorous cascade, perfect.—Community Service.

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THE Permanent Products 100-Year Concrete Granaries protect grain and continue to add dollars of income far in excess of the cost of the original granary.

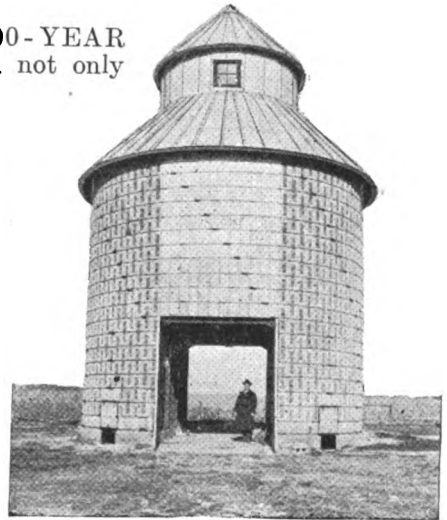
PERMANENT PRODUCTS 100-YEAR CORN CRIBS protect your grain not only from rats, rot, mould, and fire, but also from damage by rain and snow.

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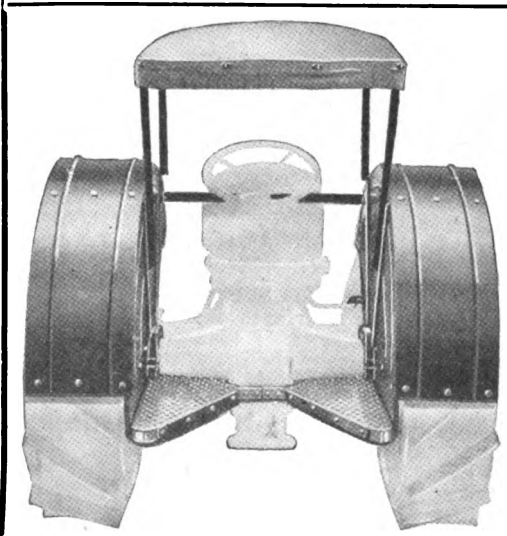
8,000 Fordson Owners Say M-C-F Fenders are Strongest

Built to stand the hard knocks and have distinction. Take a look at the platform. Doesn't it show the different uses it can be put to? It is made to last.

Platform is built low so the operator can drive from a standing position. In this way the change reflects the ease of operation.

The heavy gauge steel of the fenders is stiffened by the beading and braced by four spokes of $\frac{3}{8}$ x $1\frac{1}{2}$ inch bar radiating from U-clamps. Crown and skirt are securely riveted to spokes.

Heavy steel U-clamps, held to axle by four bolts, make the fenders secure. The bar across the steering housing cuts vibration to the minimum.



Reinforced 100% by proper bracing

Note the canopy. This keeps the broiling sun from beating down on you and protects from the rain. Canopy is covered with 12-oz. waterproof duck. The frame is made light in weight, but strong and rigid, of $1\frac{1}{4}$ x $1\frac{1}{2}$ x $1\frac{1}{4}$ angle iron bolted and reinforced to the spokes.

Note the cut in feature of the platform. Not only safety over other fenders in draw-bar operations, but interferes in no way with the turning radius of the tractor. Tests have shown that the platform will support a weight of over 2,000 pounds. This denotes strength.

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Michigan Crown Fender Company
Ypsilanti, Michigan
Manufacturer

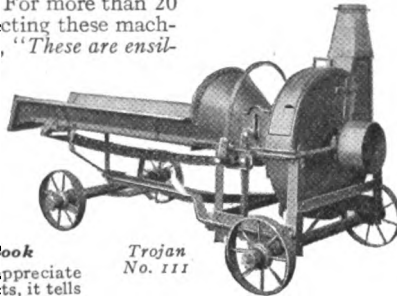
What is 20 years' experience worth?

WE KNOW folks who wouldn't part with their last 20 years' experience at any price. And that's the way we feel about it. For more than 20 years, now, we have been building ensilage cutters. For more than 20 years we have been improving and perfecting these machines. That's why we are frank to quote, "These are ensilage cutters worthy of the name."

Our Cylinder Type machine (pictured below) holds a pleasant surprise for those who have never seen it perform. No matter how tough the job, it cuts its way through as quickly and as easily as a lawn-mower runs through grass. And it keeps right on, hour after hour, without a murmur. Safety is another big feature—hence its name, Safety-Automatic.

Practical Men Will Appreciate This Book

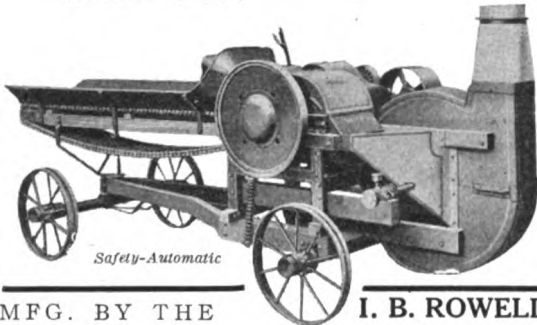
You men who have been "on the job" will appreciate our big, free book. With photographs and facts, it tells what you want to know about a cutter. Best of all, it shows the value of 20 years' experience. You can have a copy of this book if you send us your name and address on a penny postcard today.



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We honestly believe that the Trojan No. 111 is the greatest fly-wheel type cutter on the market. It has every modern improvement, including Hyatt Roller Bearings. It combines speed and durability with life-time service. And it costs less than other machines of equal quality. If you prefer this type of cutter, write for complete description and prices. A penny post-card mailed today will insure immediate attention.



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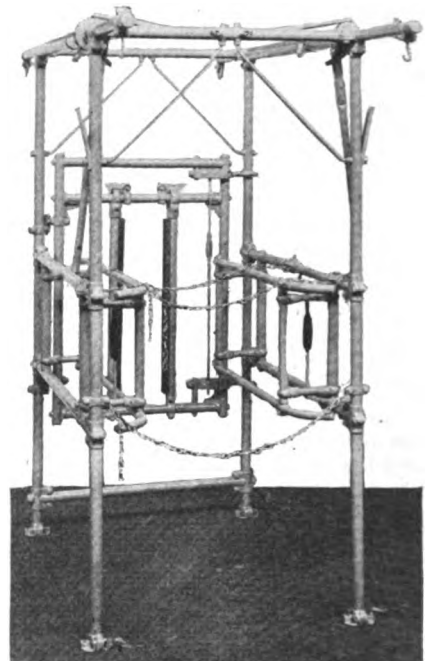
Conducted by

A. S. Alexander, M. D. C. Professor
of Veterinary Science University
of Wisconsin

EDITOR'S NOTE—Dr. Alexander will answer any question regarding diseases and treatment of livestock for *FARM MECHANICS* readers. Write fully, addressing your letter to Veterinary Department, *FARM MECHANICS*, 1827 Prairie Avenue, Chicago, Ill.

New Bovine Operating Stall

VETERINARY science has of recent years made great strides in the successful treatment of barrenness of cows and diseases consequent upon germ infection of the generative organs. Since the discovery of the *Bacillus abortus*, by Bang



The New Stader Stall for Operating on Cows.

of Copenhagen, as the cause of the contagious abortion disease which has become a veritable scourge and widespread in the cattle herds of the country, veterinarians have striven their utmost to devise successful methods of treatment for that malady and its train of abnormal conditions. Albrechtsen, of Denmark, next made a success of a new method of dealing with sterility and explained it in a little well illustrated book. In it he also gave particulars regarding the conditions commonly met with by the expert in uterine, vaginal and ovarian diseases of the cow and described the methods and special instruments which he had devised and found effective for their treatment.

Following the instructions of Albrechtsen many well qualified American veter-

inarians commenced the treatment of sterile cows and soon achieved notable success. As the result of this work many improvements have been made in the instruments used to fix, expose, dilate and douche the os, or mouth of the womb, the cervix, or neck of the womb and the uterus, or womb proper. For the proper, convenient and safe employment of these instruments and the perfect examination and handling of the organs involved it also became necessary perfectly to restrain the cow. So delicate are some of the manipulations necessary during treatment and so great is the danger of permanently or fatally injuring the animal should it suddenly change its position that absolute restraint had to be applied to insure success and prevent accidents and fatalities. To Dr. Otto Stader, one of the successful specialists in the treatment of bovine sterility and kindred ailments, the profession owes the introduction of a restraining stall or stocks which seem perfectly to meet requirements of such an apparatus.

Dr. Stader outlined his ideas to the experts with the result that the admirable contrivance here illustrated is now available and being successfully used at the Carnation Stock Farm, where Dr. Stader is the retained veterinarian, and at some other notable establishments.

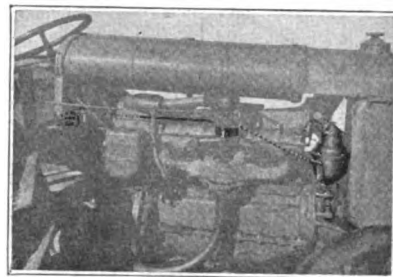
The cow having been led into the stall from the rear, her head is then fastened in the stanchion. The twin horizontal bars with the curved ends are next pressed against the cow's sides just tightly enough to prevent her from lunging forward. A chain stretched across the rear of the stall prevents her from backing and two chains placed across her back hold her firmly and prevent inner abdominal straining. The tail is held to one side or the other by a special clip on the right and left stall post. Thus held, the cow cannot wrench forward, backward or to the sides and rests in a comfortable, easy position which make effective treatment possible. Knowing this, the operator works confidently undistracted by the fear of mishap due to conditions not under his control. Everything is ready to his hands. The instruments lie on a swinging tray fastened to the right-hand stall post. The receptacle containing the antiseptic douching fluid is suspended from a hook attached high to the stall post. Everything is sanitary and can readily be disinfected. Upon completion of the treatment the side bars are released, the chains unfastened, the stanchion opened, the gate at the front of the stall unlocked and the cow led forward and thence to her stable quarters. The gate at the front of the stall is an advantage as the cow need not be backed and run the risk of slipping and falling. The operating stall is best located in a special room having facilities for



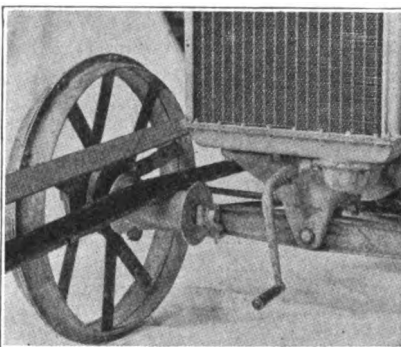
EQUIPMENT FOR FORDSON

Fordson Owners Beware

Don't buy a governor that a tractor manufacturer wouldn't even consider as equipment. The market is flooded with vacuum and belt driven governors for Fordsons. All of the 200 models of tractors on the market are equipped with gear driven, flyball governors. Experience has taught them. Don't spend your money on makeshifts but invest it in a **TACO (Gear Driven) FLYBALL GOVERNOR**. Over 45,000 Taco Governors in use on Fordsons now. Nine manufacturers equip their tractors with them. Taco Governors are sold on an absolute guarantee.



Taco Model "A" Flyball Governor for old style manifold Model "B" for new style manifold.

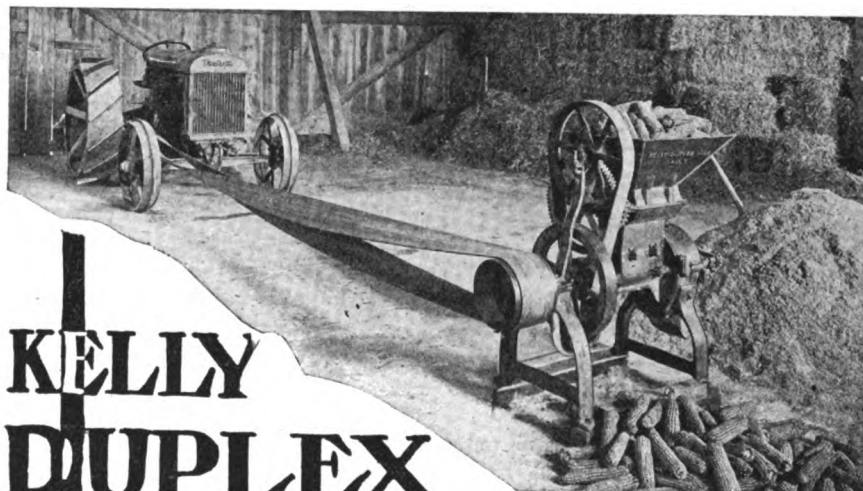


You get your money's worth when equipping your Fordson with the **TACO Ball Bearing Belt Guide**. It will save its cost on one expensive belt and will outwear three or four of the cheaper belt rollers. Prevents belt from riding on axle and actually permits motor to show more power at the driven pulley.

Write for catalog on **TACO-MYERS** Mower which attaches direct to Fordson.

See your nearest Fordson dealer or write us direct for more complete information.

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Combination Cutter and Grinding Mill

It's the Kelly double grinding surface—the shaft without end thrust—the small diameter grinding burrs, set close to the shaft—that makes the Kelly-Duplex Mills do twice the work with less power than other mills of its size.

Grinds ear corn and cob with or without husks. All kinds of grain,

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hot and cold water, a sterilizing equipment for water and instruments, and where there will be nothing to distract the attention of the veterinarian or make possible the spread of infection from cow to cow. The new stall is also useful for several operations other than those involving the womb and will be found serviceable and profitable wherever large numbers of valuable cattle are kept.



Relation of County Agent to People

By A. C. TRUE

Director, State Relation Service, United States Department of Agriculture

THE county agricultural agent is a public official whose business is to make available in practical form the knowledge of agricultural science as developed by the state experiment stations, the United States Department of Agriculture, and the results of the best farm practice. He is expected to show by field demonstrations, publications, and otherwise the application of such knowledge to local farm conditions.

The advantages of improved farm practices as demonstrated on the most successful farms in the county where the agent is employed are called to the attention of farmers in his territory. With these demonstrations before them, individual farmers are able to determine intelligently the extent to which they will apply the lessons of the demonstrations conducted by the agent.

The county agent is an officer of the State College of Agriculture and the United States Department of Agriculture. He may also be employed in co-operation with the county government or the county farmers' organization contributing to his support and aiding in his work. He is not, however, expected to act as the business agent of the individual farmer or of groups of farmers in carrying on commercial transactions. He is not in any sense a hired man, operating the farmer's own farm enterprises.

The subjects on which the county agent may give demonstrations or advice are as varied as the needs of the farm population in his county. It is his duty to demonstrate the application of agricultural science to soil management and building to the control of plant diseases and insect pests, to the introduction of better varieties of farm crops, and to improvement in methods of feeding, breeding and care of farm animals. The economic management of the farm as a whole to yield the largest net returns, the study of systems of marketing local farm products, advice on the purchase of farm supplies, co-operatively and

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On the ends of every "true Tidewater" Cypress board you'll find the "ARROW" trade mark, "the mark to buy by." If your local lumber dealer can't fill your order, write us—giving his name.

otherwise, are broader phases of his diversified work.

As a co-operative employee of the United States Department of Agriculture, the State Agricultural College, and the county, the county agent's first duty is to inform himself as to how he can intelligently serve all the people of his county. He must get a general idea of conditions, of the local system of farming, the kind of people he is to work with, and a knowledge of soil conditions. He must meet with representative farmers of the county and with them formulate as a definite plan of work in regard to their more urgent problems.

As he must endeavor to reach as many of the people as possible, and help them raise the average standard of farm practices, there must be a number of concrete demonstrations well scattered over the county from which definite reports of results can be secured. The county agent's strength of leadership is demonstrated by his ability to perform his duties without drifting into superficial work; to maintain a well-balanced program; to distinguish between essentials and non-essentials under existing conditions; to get people to help themselves, and to co-operate with them in such a way as to secure their assistance and to assist them in making and carrying out the general program.

While the county agent's position and duties make him the leader in agricultural matters, he cannot fairly be expected to be an expert on all agricultural subjects. He should have a sufficient general knowledge to advise on the leading questions, and he should know on what specialist to call for help on technical or difficult problems that may arise.

Those in charge of co-operative extension work, both in the United States Department of Agriculture and the agricultural colleges, believe that the agents should assist the farmers of the county with every problem connected with their business, from the preparation of the soil to the marketing of his products. It is natural for the farmers to look to the agent as their agricultural advisor and leader in marketing as well as production and to expect him to give them information on questions of harvesting, grading, and packing. For the past two years the marketing problem has been the most vital one to all branches of agriculture. It is believed that it is legitimate and proper for the agent to encourage co-operative marketing, to obtain information as to what products should be worth, where the best markets may be found, and how these markets may be reached at the least expense to the producer.

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By the Rotor construction principle, it gives a wipe contact of steel on steel insuring the hottest possible spark. U & J Timers for Fords and special U & J Timers for Fordsons sold by dealers everywhere on

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Our Readers Are Requested to Make Free Use of this Department for Questions and Answers on Modern Farming and Farm Improvements

Farm Name And Mail Box Post

Editor, Farm Mechanics:

It is surprising that the post to which the rural mailbox is attached has not received more attention. In many cases it is a small post that soon leans and makes an unsightly appearance.

The first impression of a farm home is often influenced by such a detail as the mailbox post altho it is well known that the first impressions are very lasting and hence should be pleasing ones.

The post shown was designed by the University of Minnesota College of Agriculture. It is of simple construction so that the handy man with a

few tools can easily construct this post which will be a credit to the farmer. Letters of aluminum may be purchased and applied to the name board or the name may be painted.

The drawing makes the details and the sizes so clear that further explanation is not necessary.—H. B. White, Ass't Professor of Farm Buildings.



"Disadvantages None"

Editor, Farm Mechanics:

In your issue of July, Mr. Norman S. Fish has an interesting article "Turn on the Water." As one of the many users of the "Fresh Water" system illustrated at Fig. 4 (my pump is a different pump from the one pictured in the well and cistern) I must take exception to his advantages and disadvantages.

My ten or more years' experience with such a system are:

THE ADVANTAGES

1. Fresh water.
2. Sufficient fire protection.
3. One tank for hard and soft water.
4. No expense of elevated tank.
5. No danger of freezing. My tank is placed outdoors.
6. Low cost of operation.
7. Upkeep nothing to speak of.
8. Sand not affecting the valves.
9. Not complicated.

DISADVANTAGES

1. None.

My experience with such an outfit no doubt would be of interest to those of your readers who contemplate installing a water system. Twelve or more years ago I moved to the country. Having to pump water by hand power proved a laborious and endless job. In looking around for relief I purchased an engine and pump jack, and

was about to erect an elevated tank. In looking over the ads for such a tank I saw that of the Milwaukee Air Power Pump. I at once saw the merits of such system and arranged to have an outfit shipped me. I am not a mechanic, but it being so simple I installed it myself, purchasing the necessary tools.

My well is 70 feet deep; to the second floor of the house is 24 feet more, 94 feet in all. With a house pressure of 45 pounds I have a good flow of water at all points, and by simply throwing a lever on the pressure valve, I obtain pressure sufficient to throw water over the house. As to service, I pump air and sometimes saw wood at the same time, having a pulley on each side of engine. At the present price of gasoline, I pump a week's supply for 13 cents.

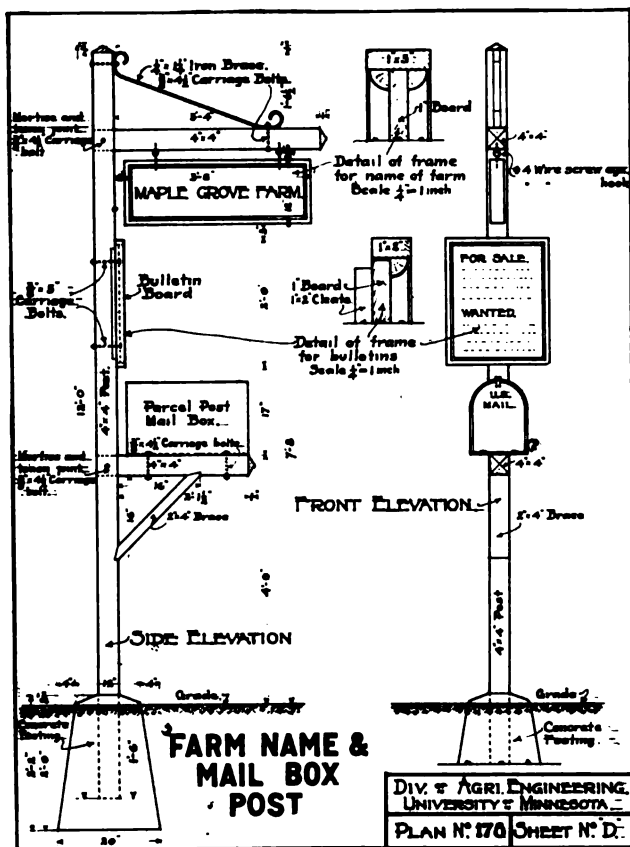
The drain on this system is a family of eight grown persons, and at the present time four families, neighbors, obtain drinking water from this pump. Besides, we have one horse, two cows, and several hundred chickens drawing on this supply. This pump has not seen daylight in all these years. I also have the same kind of pump in the cistern. This style of pump will give service in as little as 10 inches of water. I also have a septic tank like Fig. 7 without the ventilator.

I am in love with your magazine—
Chas. W. Bentley, Lanham, Maryland.



Feeding Brood Sows

"OVERFEEDING the brood sows is one of the important points that farmers have to guard against at this time of the year," E. J. Wilford, one of the specialists at the Kentucky College of Agriculture says. "Thousands of newly born pigs are thrown off feed because their mothers received an excess of feed which in turn produced a flow of milk that was too abundant for the young animals. To overcome this condition, feeders on the college farm practice a system of limited feeding for some time after farrowing. All feed is withheld from



Plans for Farm Mail Box and Name Post, Designed by University of Minnesota, Department of Agricultural Engineering.

DIV. OF AGRI. ENGINEERING,
UNIVERSITY OF MINNESOTA
PLAN N° 176 SHEET N° D

the sow on the day she farrows and nothing but water allowed her. For the next two or three days she is given a light allowance of shipstuff or middlings in the form of a thin slop. On the fifth day after farrowing, corn meal is introduced into the ration which then consists of about one pound of corn meal, four pounds of shipstuff and one-fifth of a pound of tankage. These feeds are gradually increased until at the end of 10 days, the ration being fed is made up of three pounds of shipstuff, three pounds of corn meal and a half pound of tankage.

"At the end of 30 days, the feed is composed of seven pounds of corn meal, five pounds of shipstuff or middlings and one pound of tankage. This is considered full feed while the amount which is fed to the sow is determined by her size, the number of pigs she is suckling and her ability to produce milk. Generally, when a sow is on full feed she should be receiving an average of about four per cent of her live weight in grain each day. This is fed in the form of a thin slop. If skimmilk is available, it is well to add a limited amount of this to the ration. Some sows have demonstrated that they are capable of producing little milk and begin to fatten as soon as the feed is increased. In cases of this kind it is necessary to reduce the amount of feed which is given to the sow each day."

✱

Badger Farmers Give Yellow Clover Trial

A NEW sweet clover is on trial in Wisconsin. Albatrea Sweet Clover is the full name of the late arrival. It has a yellow blossom and is a biennial plant and hails from Canada.

More than 250 test plots have been seeded with Albatrea this year by members of the Wisconsin agricultural experiment association. Nearly every county in the state has one or more of these plots.

According to E. D. Holden of the agronomy department at the Wisconsin College of Agriculture, the advantages of the Albatrea "yellow blossom" over the common sweet clover are: it has a finer stem; does not get coarse and woody; and is easier to cure.

"Sweet clover hay," says the Badger economist, "is high in feeding value, and makes excellent pastures."

For 15 years, Albatrea has been grown successfully in Canada. Two years ago some seed was imported to Wisconsin and tried out at the experiment station at Madison. It gave so great promise that it has been disseminated among the farmers of the state for further trial.



Before You Turn this Page—

Discover—how you can have in your own home—

Water—direct from well or spring—
no storage tank.

Water—a plenty under sufficient pressure
for fire protection, sprinkling your
lawn and washing your car.

Water—fresh and cool as the spring.

Water—at a turn of the faucet—con-
venient as city service.

Water—from a pump with but *one*
moving part—no belts, no valves,
no gears—all bronze—least main-
tenance.

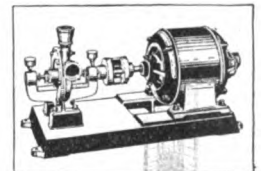
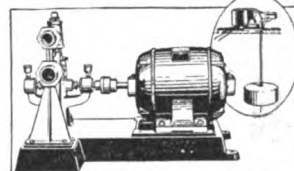
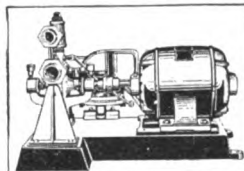
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Here's a quality water system for which a quality price is asked and which has justly earned the reputation of producing quality results. A pump made of all bronze, with two outboard ball

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Westco Pumping Units for use with pneumatic or open tanks, for booster service, for circulating ice water, brine and general commercial purposes.

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The Hunting Company, Watertown, N. Y.
The Hunting Company, Rochester, N. Y.
Woods & Company, New York City.
Keystone Supply & Mfg. Co., Philadelphia, Pa.
Southern Supply Company, Baltimore, Maryland.
Bailey-Farrell Mfg. Company, Pittsburgh, Pa.
Standard Sanitary Mfg. Co., Youngstown, Ohio.
W. M. Pattison Supply Co., Cleveland, Ohio.
Ascher Supply Company, Columbus, Ohio.
American Plumbers Supply Co., Toledo, Ohio.
Wm. T. Johnston Company, Cincinnati, Ohio.
P. A. Vogel & Sons Company, Louisville, Ky.
P. & H. Supply Company, Fort Wayne, Indiana.
Murray W. Sales & Co., Detroit, Mich.
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Helps for the Housewife

MECHANICS in the HOME



An Automatic Clothes Line Reel

THE clothes line reel shown in the accompanying drawing will have an especial appeal to the busy and systematic housewife. For it not only is automatic in its operation, keeps the line out of the weather when not in use and is of attractive appearance, but it can be made in a short time by the "handy man."

A four-inch gas pipe is set in a concrete foundation, extending above the ground about seven feet. To the top of this is fastened a wood box which contains the reel and which protects the line from weather. This box is secured by simply threading the pipe and turning on a floor flange which can be procured from any pipe fitter. This is provided with three or four holes. Thru these, short lag screws are inserted and turned into the bottom of the box.

Use five-eighths inch lumber for the box, with a two-inch piece for the bot-

tom to insure ample strength. The top may be cut as shown and one-half hinged for easy inspection of the interior. It should be about twelve inches wide and high and ten inches long, outside measurements.

The detail drawing shows the reel assembled. The reel proper is made by tacking two seven-inch pie tins, bottoms together, to a circle of wood two inches thick and five inches in diameter. The spindle or shaft may be a length of broom handle or other hard wood two inches longer than the length of the box and about one inch in diameter.

Before the box is placed, get an old inner tube in a lively state (dead rubber is useless) and cut from it a length five feet long and about one and one-half inches wide. This, as you will note by the drawing, furnishes the force which maintains a constant tension on the reel shaft. It is so flexible that from 20 to 80 feet of line can be carried on it without causing undue stretching of the rubber. To afford plenty of length, one end is fastened on the inside of the pipe, just above the ground, by running a bolt thru the pipe.

Double one end of the rubber strip and wrap it with two or three turns of wire. Then tie a string to the other end and lower it in place. When the loop comes even with the hole, the bolt is run thru both and a nut placed on the protruding end.

Bore two holes thru the box for the shaft, and after placing the pan reel within, run the shaft thru one side of the box, thru the reel, and then thru the other side of the box. When it has been located, coat the hole in the reel and a portion of the shaft, then slide the two together and let the glue set.

Run the string attached to the rubber thru a hole cut thru the box bottom, and after the box has been fastened, bring the end up thru and tack it to the wood shaft, directly over the hole. Care should be taken that the strip does not rub anywhere.

Prior to this step, the line has been fastened to the reel and wound upon it. Now bore another hole in the front of the box and in the line with the reel. Pull the free end of the line thru and knot it. This step completes the reel.

The wood shaft should be well oiled, and a loop tied in the end of the line so that it can be hooked to the other pole or poles as the case may be. It might also be well to knot the line on the inside of the box at the proper point in order that no more than the right amount of line will be unreeled.

This reel should last several seasons. When the rubber gives out, it can be replaced. The pipe is set in concrete.—DALE R. VAN HORN.



Fabric vs. Figure

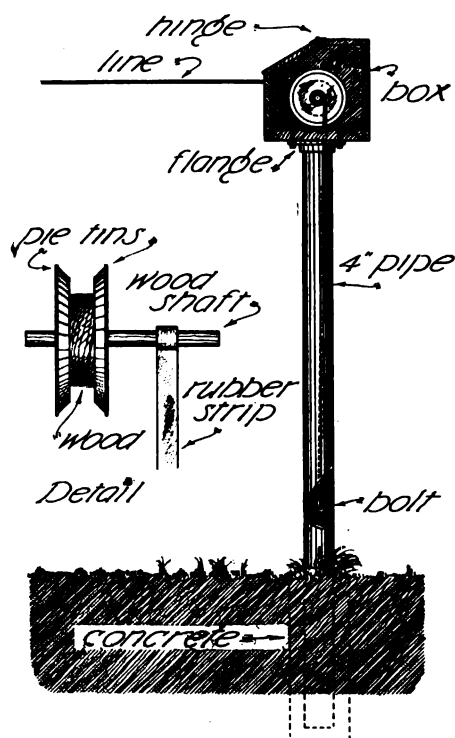
IT is a funny thing, but a woman rarely thinks of fabric when she considers the suitability of a garment to her figure.

A short plump little lady was so overcome with admiration for her daughter's crisp pink organdie commencement dress that she straight-way had one made for herself. You may picture them—"Mother," short and stout; "Daughter," tall and slim. The smart organdie made the girl look like a huge, bright butterfly—her slender arms and legs all the slenderer under the full ruffles, tucks, and flying sash.

Mother was rather pathetic with her mature charms set off by a sixteen-year-old frock. The crisp organdie stood out just as stiffly exaggerating her plumpness, and the delicate tint so lovely against the skin of youth made her look ten years older than she really was. When her attention was called to her mistake she promptly gave the dress away, and, being a good sport, laughed over her own lack of judgment.

Now there comes a time in every woman's life when she must put away her desire for organdies and plaid gingham because they add breadth when she needs length. All fabrics that stand out stiffly, like taffeta, some satins, tissues, etc., are taboo. Materials with a sheen like satin are unsuitable, too, as they reflect the light at hip, shoulder, and bust, thus calling attention to the very shortcomings the older woman is trying to conceal. Large patterns, plaids and heavy napped materials exaggerate one's size, especially those in light colors.

There are lovely things to choose from if one knows the secret. Crepes



AUTOMATIC CLOTHES LINE REEL

Plan of Clothesline Reel That Saves Labor.

of all kinds, georgette and chiffon—all soft and without lustre. In cotton fabrics there are Japanese crepe, eponge, ratine, voile, sateen to mention a few, and wools offer any number of lovely materials. Study the folds of a gown fashioned of Canton crepe compare it with a taffeta dress and you have the whole story.

If you want to be sure, take a good look the next time you see a woman with one or two double chins and judge for yourself if she has chosen the right stuff for her gown.



Cooking Meat in Pressure Cooker

HOW long and at how many pounds pressure should various meats be cooked in the pressure cooker?

According to the University of Nebraska Agricultural College, this question is not easily answered, for many factors influence the time of cooking. Among these are the weight, shape and size of the piece to be cooked, the amount of bone it contains, and, most important of all, whether it is old and tough or young and tender.

In general, a large, thick piece of meat which is rather tough should be cooked about 15 minutes to the pound at 15 to 20 pounds pressure. One of the most tender cuts, however, such as a leg of lamb, would require only 10 minutes to the pound at a pressure of 15 to 20 pounds. When meat is cut into small pieces, as for stew, it does not make any difference in the time of cooking whether the amount of meat is 2 pounds or 7 pounds. At 15 to 20 pounds pressure, 30 to 50 minutes, depending upon the toughness of the meat, will be long enough to cook it. This applies also to a chicken cut into pieces before it is cooked.

Overcooking is never desirable and should be avoided when meat is cooked in the pressure cooker. Otherwise flavor and juiciness are sure to be lost even if the meat does not actually become hard and dry and altogether undesirable.



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To Start a Titan

To the Expert:

I am a subscriber of your magazine. I would like to know how to start a Titan 10-20 with batteries and coils, and the same for a Ferro motor for a row boat.—LESTER A. MORGAN, Oshkosh, Wis.

Answer—It is not possible to wire up your Titan 10-20 tractor to start with batteries. This tractor uses a K. W. high tension magneto for ignition and to use batteries would require the removal of this magneto and the installing of a battery ignition system.

This is also true of your Ferro row-boat motor, as it also has a high tension magneto. If the magnetos on these two motors are in good shape, no difficulty should be had in starting, providing everything else is in good shape.—F. M. SERVICE.



Pulley for Thresher

To the Expert:

What size pulley should be on an 18-inch cylinder separator, speed of 900 to 950 R. P. M., to be run with a Fordson?—RAYMOND TAYLOR, Cascade, Mont.

Answer—A 10-inch pulley should be used on your separator to drive it at 900 to 950 R. P. M., as the Fordson pulley is 9½ inches in diameter and travels at 1,000 R. P. M.—F. M. SERVICE.



Commutator Worn

To the Expert:

Can you tell me what causes a motor to run at variable speeds? This motor is about 1 horsepower and has given good satisfaction operating a pressure pump until the last few months. It has been in use five or six years and is run direct from a generator of 1 kilowatt.

It starts very slow sometimes—just moves—again it starts off promptly and at normal speed. It has, I think, six "fields" and brushes appear to be in good order. It is very seldom run over a few minutes at a time.—FRANK DE FOREST, Dows, Iowa.

Answer—The trouble in your 1 horsepower electric motor is probably due to a worn commutator, as six years' use is

Mr. Service will answer free of charge for Farm Mechanics readers questions of general interest on Automotive troubles. As a "trouble shooter" he is probably the best equipped man in the industry, having diagnosed the ailments of thousands of automobiles, trucks and tractors. Put your troubles up to F. M. Service—Editor.

bound to cause wear at this point that would affect the running. Take the motor apart and have the armature placed in a lathe and a thin cut taken off the copper segments of the commutator. After this is done, the mica between the segments should be undercut.

This is done by using a small milling cutter or draw knife which is just the thickness of the mica, which should only be cut enough to bring it just below the surface of the copper.—F. M. SERVICE.



Carburetor Trouble

To the Expert:

I have been a subscriber to FARM MECHANICS for some time, and have taken very much interest in your Motor Trouble Advice column. Will you please answer a few questions for me thru this column?

I have an Overland touring car, Model 81, which has given me carburetor trouble. It is a Shebler Model R, supplied with the machine. It has only one adjustment for gas supply except the choke. It consumes lots of gasoline, and does not supply the motor proper mixture for different loads and speeds. The spark is good under all conditions, and the only trouble I am able to locate is with the carburetor.

I am also operating and caring for a gasoline engine which has broken several pairs of governor balls in the last few weeks. We have replaced castings, bearings and gears, and it does not seem to overcome breakage. The engine is a Root & Van Dervoort 12 horsepower. It is used only on a light steady load.—RUSSELL CONNER, Jamestown, Ohio.

Answer—The Shebler Model R carburetor is a very good carburetor and should give good results on your car if it is in good condition. Are you sure that your valves are in shape and the

compression is even on all cylinders? Try this out by testing the compression with the crank. Turn the motor over by hand and see if the springy action on the crank as it is lifted is the same on all cylinders. If there are not four even actions have the valves ground. Of course, if the valves are in good shape, and the ignition is all right, there may be something wrong with the carburetor, and we would advise you to ship it into the Shebler Carburetor Company and have them put it in shape, or if you have lost all confidence in it, replace it with one of the well-known ones now on the market.

The trouble you are experiencing in your stationary engine must be caused by the governor traveling at too high a speed, or due to the governor shaft being sprung, causing the balls to take an eccentric travel as they turn.—F. M. SERVICE.



Oiling System Leaks

TO THE EXPERT:

As we subscribe to the FARM MECHANICS I wish to take advantage of the opportunity it offers for advice on motor trouble.

I have a Chevrolet roadster of 1918 model, the oil system of which acts as follows:

If the motor is started after being left standing idle for some hours, the oil system starts working immediately, and continues working as long as the motor is kept running; it starts working with the indicator registering about 5 and then gradually works down to where it registers only about 2. If the motor is then stopped and started again within ten or fifteen hours, it will not work at all, unless started immediately after being stopped. If primed it will work at any time.—P. L. JOHNSON, Bedford, Virginia.

Answer—The reason why the oil pressure drops from 5 to 2 after the motor is run a while, is because the oil in your crankcase becomes very thin when heated and consequently passes thru the pump more readily than when cold and thick.

The fact that the oil will not start pumping after the engine has stood for a few hours is that your pump has an air leak in it. This type of oil pump as used on the Chevrolet is simply 2

gears that mesh together in a casing located above the oil level, and there is a plate which can be taken off to inspect or replace the gears. There should be a thin gasket under this plate to make the joint air tight, but if the gasket is too thick and brings the plate away slightly from the face of the pump gears, it allows the vacuum produced on one side of the pump to suck air between the gears and the casing sides, and the pump will not work when the oil in it has run entirely out. A leak in either of the oil lines leading to the pump will also cause it to work as you describe. We would recommend that you go carefully over both the pump and the oil lines, and find and eliminate the leak. If the gears are found to be worn badly, it would be best to replace them too.—F. M. SERVICE.



Reo Misses

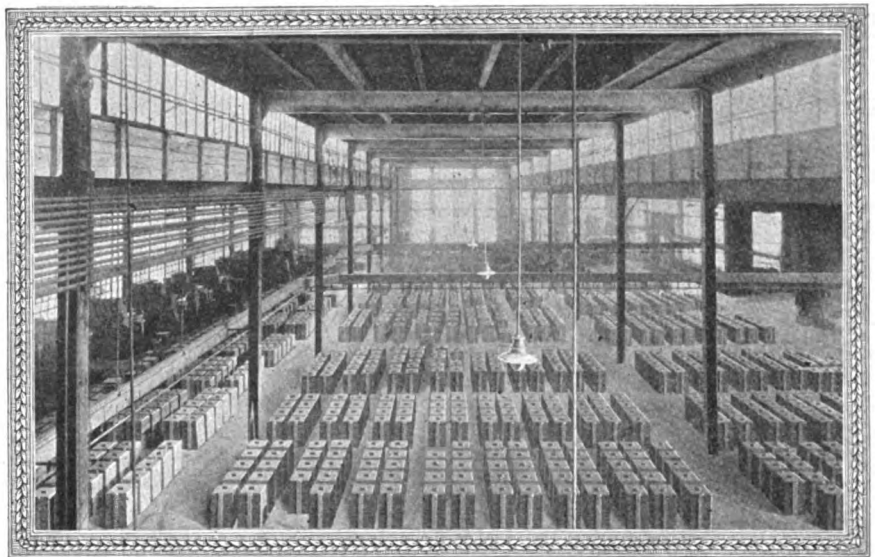
To the Expert:

Kindly diagnose my motor trouble. I own a Reo touring car which has run about 7,000 miles. It misses on one cylinder when cold for about one-half mile. After that it does not miss any more.

I am positive the valves are tight, the cylinder is not scored, there is a good compression in each cylinder. The ignition must be the fault. The spark in this cylinder seems to be not as good as in the other cylinders. The ammeter hand oscillating briskly shows from 2 to 4 amperes for firing on one cylinder.

I have wound the wire from coil to distributor with splicing compound and with tape. I have put new wires from distributor to spark plug. It is a 4-cylinder Reo with Remy 1917 closed circuit generator, and the distributor starts on battery. No doubt you know this ignition better than I do. The distributor block can be moved from one side to the other about 1/10 to 1/20 of an inch, which throws the distributor arm close to some terminals of the distributor block. In fact some terminals are scraped by the distributor arm and some don't show that the arm touches them. Could this be the cause of one cylinder missing when cold? If so, what would be the remedy? If not, what can be the cause?—LOUIS HARKS, Itasca, Ill.

Answer—In spite of the fact that you think your trouble is in your ignition system, it does not seem to be from your description. In the first place, there is nothing in the Remy ignition system that would cause it to throw more current to one cylinder than the other in spite of the play, etc., you speak of in the distributor shaft, except a short in the high tension wire leading from the



World's Foremost Piston Ring Foundry

FOR over forty years—in fact from the inception of the internal combustion engine, until 1914—no advance was made in piston ring design, which was worthy of the name. In spite of the best efforts of inventors and engineers, to devise a more efficient piston ring than the ordinary, "leaky" diagonal-cut, plain surface piston ring generally used in engineering practice, no satisfactory solution of the problem was found.

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—a truly round, concentric piston ring from individual castings.

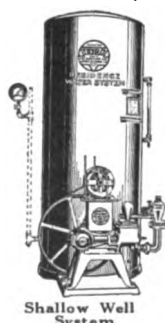
By a scientific and mathematically accurate formula, a pattern shape (a cycloid) is secured, from which the casting is made. This casting, machined to certain definite limits, produces a finished piston ring, which, when placed in the cylinder, contacts with the cylinder wall at all points, with an even, uniform pressure.

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"Duro" Water Systems for Farm Homes

DURO PUMP & Mfg. Co.
Dayton, Ohio

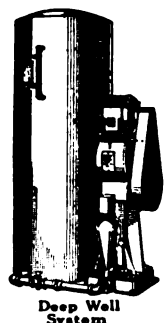
Gentlemen:—

Without obligation send Catalog F-33, on Pumps and Water Systems.

Name.....

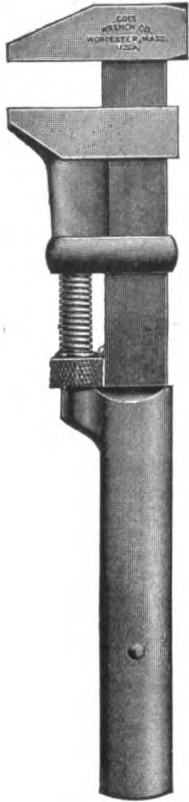
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Deep Well System

COES WRENCHES



On the modern farm where everything is being done by machinery, you will find that Coes Wrenches are helping to keep each and every machine in first class running order.

Coes Wrenches are built to give better service and last longer than any other wrench on the market.

*For sale by all good
dealers*

Coes Wrench Company

Worcester Massachusetts

WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

distributor head to the spark plug, and you have eliminated any possibility of that.

Regardless of the fact that you are sure the motor has good compression we would recommend that you remove the exhaust valve of this cylinder and after carefully polishing the valve stem, grind the valve in until a clean seat is had on both the valve face and seat, and after replacing it be sure that there is a clearance of about 15/1000 of an inch between the valve stem and tappet when the valve is closed. We would be glad to have you advise us if this does not correct your trouble.—F. M. SERVICE.



Cylinder Rusted Thru

To the Expert:

How can holes be stopped in a cylinder that has been rusted thru? This is in a one-cylinder Emerson engine. The cylinder is in a solid piece with the base and the cooling tank.

If you can give me a remedy for this your help will be appreciated and FARM MECHANICS will climb still higher in my regard and esteem.—MARVIN DOUGHTY, Mendon, Mo.

Answer—There are two methods of repairing the holes that have rusted thru the cylinder wall. First get a pound package of metallic filler. This is a combination flux and metal that under the heat of an ordinary torch will adhere to cast iron, and will successfully fill scores, cracked water jackets, etc., making the old cylinder as good as new.

Second—The other method is known as the silver and nickel alloy electrical process, and is a method where any size or shape hole or crack can be welded without taking the motor apart, as the heat is applied electrically and only to the spot being welded.—F. M. SERVICE.



High Tension Magneto

To THE EXPERT:

I am asking you the following questions on my Mitchell D 40, 1917, six cylinder.

Is there any way to install a high tension magneto on this motor, and where can I get them? I have the gear ratio as I know:

Crankshaft 2 to 1 of cam shaft.

Generator 3 to 1 of cam shaft.

I must replace my ignition, and I am quite used to high tension magnetos on our two Fords and light plant as I see very little trouble in them.—ALBERT H. VOET, Marysville, Kan.

Answer—It is possible to install a high tension magneto on your Mitchell, but

as it would cost a considerable amount of money and necessitate changes in the motor that would be hard to make. However, if you care to try it, you can purchase a used magneto from any automobile wrecking company for a few dollars, that will be just as good as new, and it must be connected to run off of the camshaft or geared to it, so it will operate on the two to one ratio; also in purchasing one, be sure that it is made to turn in the same direction as the cam shaft. To time it, follow the exact timing as your present distributor, and set the advance and retard on the breaker box to operate as it operated before.—F. M. SERVICE.



Wants Anti-freeze Solution

To THE EXPERT:

I would like to know of some good substance to use as anti-freeze solution. I have used alcohol this winter in a Ford radiator and find that it is too expensive and not safe for Fords.

Is calcium chloride injurious to the cooling system?—H. D. BROWN, Columbia City, Ind

Answer—There are only three things that can be used as a cooling medium for winter weather, the least injurious of which is alcohol. The solution must be constantly tested for its strength, however, as the percentage of alcohol must be increased as the temperature is lowered. Also its use is expensive.

The next and least expensive is kerosene, which is used in an undiluted state, and will in time rot out the hose connection. However, it will not freeze at the lowest temperature, but it can only be used in a car that has a forced feed circulation and cannot be used in a Ford which has thermo-syphon, unless a circulating pump is installed.

All other non-freezing solutions have as their base calcium chloride, which will in time have a very corrosive action on the radiator and water jackets and is not recommended for that reason.—F. M. SERVICE.



SOME farmers buy all their nitrogen, others get a large part of it free. They cover crop with legumes.



A FLY-SPRAY can make milking a peaceful occupation and if Bossy eats her grain contentedly she's more likely to keep up good summer production.



BAG-WORMS are on a rampage. You'll know them by their little bags of silk and bits of leaves. Arsenate of lead in dust or spray is their poison.

Farm Facts

Condensed Items of Interesting Information

Potato bugs have invaded France, the Colorado beetle having made its appearance near Bordeaux. The French have feared for years that this enemy of potatoes would be imported from American, but this is the first time it has been seen.

Grasshopper fungous disease made noticeable progress in reducing the grasshopper scourge of western South Dakota this year. Attempts have been made to propagate and spread this disease, but little success has been made.

More than 300,000 tons of peanuts were produced in China last year, one-fourth of the crop being exported, principally to Japan.

Sugar is imported into China now, that country's sugar industry having declined to a point where it depends on foreign growers for its supply. Fifty years ago China was an exporter of sugar.

Automobile production continues to increase, 263,008 passenger cars having been made in the United States during the month of June.

A cow that weighs 1,000 pounds and produces three gallons of milk a day must have at least 100 pounds of grass during 24 hours. Many pastures do not furnish that amount, so some form of grain feed is necessary.

Corn is being grown extensively in Russia. Before the war there was an average corn acreage of 50,000. This year nearly 3,000,000 acres were planted.

Better seed wheat planted on all the farms of Nebraska would have produced \$16,000,000 more this year, says the Nebraska College of Agriculture. An increase of four bushels to the acre could have been secured if improved strains had been planted, it is asserted.

Corn, oats and barley were exported in greater quantities than ever before in 1921. Europeans, who before the war bought principally wheat and rye from us, have learned the value of the coarser grains for food.



GROWING pullets thrive on sour skim milk, buttermilk and other milk products. Considering returns, they are cheap feed!



MOWING the weeds along the road before they go to seed keeps them from seeding the adjoining fields. It also destroys the favorite hiding place of insects and diseases.



This Paul System delivers 180 gallons per hour from shallow well. Price complete as illustrated, \$175.00.

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Running water in the bathroom, kitchen and laundry is the right of any woman today—and any man knows he can save money, time and labor by letting a Paul System pump the water wherever he needs it to do his work.

There is a Paul System of exactly the right type and capacity for your home and farm. Pump your water from any well, or cistern, lake or spring. Pipe it anywhere in the home and farm buildings. Light plant, gasoline engine, or central station will furnish power to operate.

Paul Systems are complete, ready to attach to well, house piping and power, and supply water under pressure in quantity from 100 to 1500 gallons per hour.

Ft. Wayne Engineering & Mfg. Co.
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Send for free booklet describing Paul Water Systems.

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REGISTERED TRADE MARK

Pressure Service from cistern, shallow well or spring. Self-priming, Self-lubricating, Fully Automatic.



Turner 2 in 1 Timer-

For Ford Cars, Trucks and Tractors



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Sales on the famous Turner 2 in 1 Timer have never been so great as at the present time. Time and again our production has been increased (several times doubled) to meet the ever growing demand for this great product. Recent tests have shown the Turner 2 in 1 Timer going strong and showing very little wear at the end of fifty thousand miles. Has stood repeated and rigid tests for over five years and has proven a genuine quality article and a boon to every Ford owner. Increases power, insures an instant start in all weather, lessens fouling of two front plugs, saves gasoline and stops motor kicking. Is oil, grease and waterproof. Requires no oiling. Easily installed.

Price Complete with Wiring Assembly in Metal Conduit **\$3.60**

TURNER MANUFACTURING CO., Kokomo, Ind.

Also manufacturers of the following high grade products:

Turner Ford Foot Accelerator; Turner Spring Leaf Spreader and Lubricator; Safety Lightning Wire Assembly; Turner Door and Throttle Lever Extensions.

TURNER



SAVES countless STEPS
to CELLAR and SPRING HOUSE

Make Mother's work easier—lighten the burden of housework—save her a dozen trips every day to cellar or spring house—with the

WILLIS ICELESS REFRIGERATOR

Enables you to make use of Nature's system of cooling; gives you an ice box that needs no ice, no expense, no up-keep, no repairs. Puts the foods within easy reach of the kitchen table and keeps them sweet, clean, sanitary, pure and at exactly the right temperature, winter and summer.

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The Willis Iceless Refrigerator is guaranteed by dealer and maker to do all claimed for it; to be perfectly satisfactory or the purchase price will be instantly and cheerfully refunded.

SEE THIS MODERN REFRIGERATING SYSTEM

Write us today for our dealer's name in your territory.

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Galesburg, Ill.

WILLIS Booklet
on ICELESS REFRIGERATOR

—money for your spare hours

You may have a few free hours that easily could be turned into extra dollars. By interesting your friends and neighbors in **FARM MECHANICS** you can earn a tidy sum each month. No premiums or prizes, but actual cash profits for you. Our plan is liberal—and you know *Farm Mechanics*!

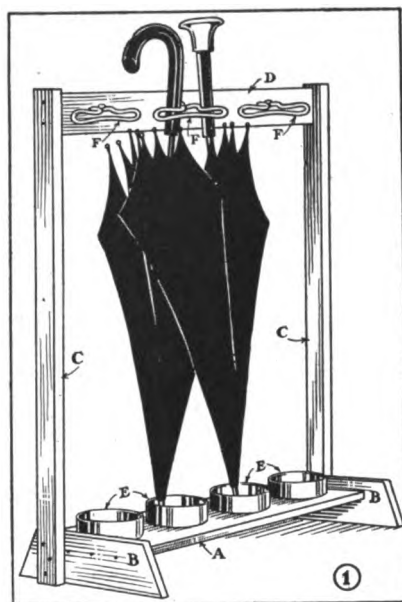
For further information address P. N. R., 1827 Prairie Ave., Chicago, Ill.

WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

SOMETHING THE BOYS CAN MAKE

Umbrella, Brush, and Broom Racks

BOTH of these racks are needed in every home, yet few homes have them. Instead, umbrellas, brushes and

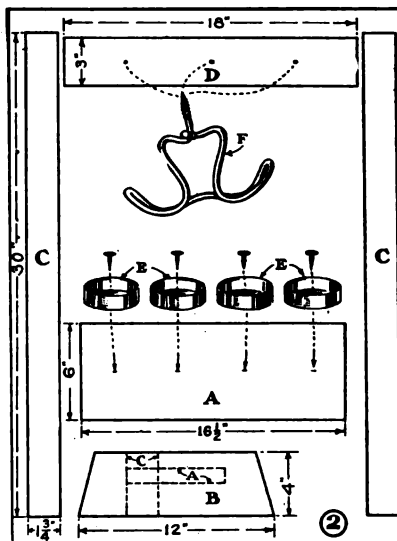


Design for Umbrella Rack.

brooms, when not in use, are generally poked away in some corner or closet, where they are not always handy to get or easy to find. Mother will appreciate the racks, and you will not only enjoy making them but share in their use.

The umbrella-rack (Fig. 1) is made with a broad base so it will not upset. if you wish to fasten it to a wall you can make the base narrower.

Each part of the rack is lettered, and you will find the detail drawings on which

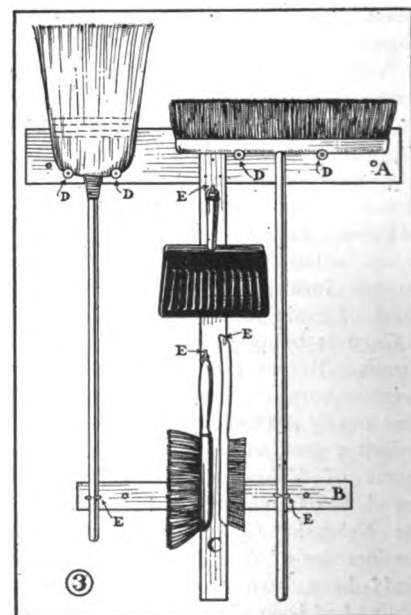


Details of Umbrella Rack.

dimensions are marked, correspondingly lettered. If you haven't a good saw, or are not used to sawing, ask father, brother or a carpenter to cut out the pieces, after you have marked them out. The pieces should be $\frac{3}{4}$ inch thick. In assembling the rack, first nail blocks B to the ends of the baseboard A, then nail uprights C to blocks B, and then fasten rail D between the upper ends.

The drain-pans on the base board are covers of baking-powder cans. Space them at equal distances apart, and fasten with a tack driven thru the center of the bottom of each. The hooks which hold the umbrella handles (F) are wire coat hooks of the form shown in Fig. 2. Only three will be needed, as you will see by the illustration.

When the rack has been assembled, stain or paint the woodwork. If you use stain, a coat of shellac and one of varnish should be applied on top of it. You can buy small cans of stains ready mixed with varnish that are satisfactory.



Broom and Brush Holder.

The drain-pans and hooks should be painted, enameled or lacquered.

The number and sizes of brushes used in your home will determine the dimensions of the brush and broom rack shown in Fig. 3. The upper rail (A) need not be wider than four inches, the lower rail and the vertical connecting strip (C) need not be wider than 2 inches. Nail vertical strip C across rails A and B at their centers and at right angles to them.

Large spools fastened with screws driven thru their center holes, make good hooks for supporting a large brush and a broom (D). Spools may also be used on

New Ankorite STEEL FENCE POSTS Improved Capital "T" Steel Post

Strongest and best-looking steel post made—greatly strengthened by reinforcing shoulders, an exclusive patented Ankorite feature. Equipped with famous Patented Crimped Anchor—easy to drive, hard to pull. Costs no more—why not get the best?

Lowest prices ever quoted on steel posts, weight and quality considered

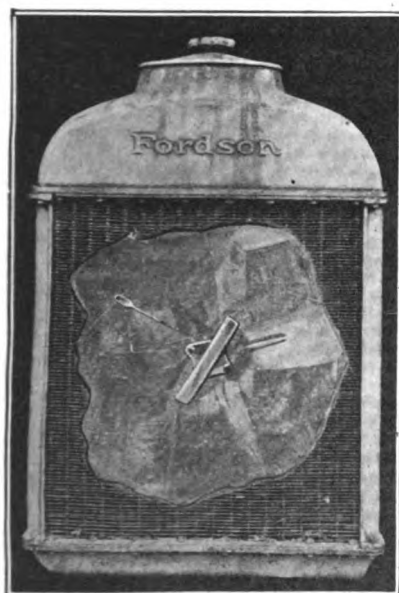
Ask for interesting three-color folder—FREE. No obligation. Find out about this practical new post, made and guaranteed by the mill that rolls the steel.

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Governor for Fordson



Fly Ball Type

Our "JR" fills every Ford requirement

Price \$10.00 f. o. b.

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Agents Wanted

Paramount Manufacturing Co.
Lancaster, Penna.

which to hang the smaller brushes, and to form sockets for the handles of the brush and broom, or you can use screw-hooks (E).

This rack should be fastened to a wall, or to the face of a closet or pantry door. Bore a hole near each end of rails A and B for screw hangers.

You can finish the brush and broom rack in any of the ways suggested for the umbrella-rack, but perhaps the most practical finish will be a varnish stain.

(Copyright, 1922, by A. Neely Hall)



If Milk Checks Are Shrinking

TO keep the summer milk checks up to normal, the cows require a little special attention at this time of the year. In spite of good pastures, grass is apt to be tough and not nearly so appetizing as it was in May or June. Hence the cows are going to stand around in the shade instead of putting away material for milk production.

This all means that the cows need a little grain at milking time during the late summer months and a little silage, too, if you have it. Green oats and peas or green corn are very good, as well as many other forage crops, cut green and fed during milking time. Here's a good grain mixture to be used while the cows are on pasture.

200 pounds cornmeal.
160 pounds cottonseed meal.
160 pounds ground oats.
160 pounds gluten feed.

Feed the grain mixture according to the way the cow responds. If a cow will not respond to grain feeding in the summer she isn't worth keeping.

At the New Jersey Agricultural Experiment Station, the cows are being sprayed night and morning with a reliable spray that kills the flies. As a result, the cows stand better for milking and since they are not bothered with the flies they have time to eat their grain. Furthermore, when the milker is swatting flies and the cow is switching her tail around in his face he isn't apt to take much interest in how much milk the cow gives.

A good fly spray is a good investment.



THE man who supports nothing but paying hens is busy now at culling his flock.



PEACH tree borers no longer baffle the up-to-date farmer. Ask your County Agent.



A REVOLVING cupboard in an otherwise useless corner over the kitchen table provides a surprising amount of storage space for one housewife.

WELL DRILLS

A Catalog and price list of Well Drilling Rigs and Equipment, Bits, Stems, Jars, Rope Sockets, Fishing Tools, Etc., will be sent on request.

Keystone Well Drills are dependable tools for Water, Oil and Gas Wells, Mineral Prospecting, Blast Hole Drilling. Portable and Traction Drills for all depths, 25 to 3000 ft.—Steam, Gas, Motor or Electric Power.

DEEP WELL PUMPS

Downie Deep Well Pumps are offered for Heavy, Continuous Service in Deep Artesian Wells. They are built in Double and Single Stroke Models and may be Steam Driven, Belted, Direct Geared to Motor, or equipped for any other standard form of drive. Smaller Pumps for lighter service.

Catalog No. 6, on request.
Downie Centrifugals, single and multi-stage, Catalog 801.

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170 Broadway, New York, Macdonald Bldg., Chicago, Joplin, Mo.
Beaver Falls, Pa.

Make Your TRACTOR SELF-STOPPING

with the

Tractor Stop

PLOW HITCH \$15.50

Write for literature and name of nearest dealer

Makes Plowing Safe and Easy

Dealers: This is a "red hot" Seller—Write for Discounts

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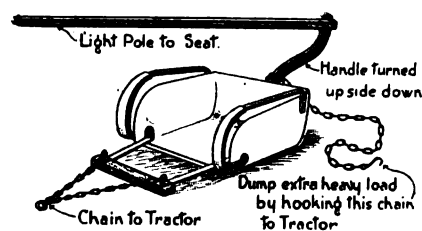
MEILI-BLUMBERG CO., New Holstein, Wis.

HANDY ANDY'S DEPARTMENT

WHERE FARM MECHANICS READERS CAN PASS ALONG GOOD, TESTED IDEAS.

Tractor Hauled Scraper

A SIMPLE method by which a scraper may be dumped from the seat of a tractor is shown in the illustration. The scraper handle is turned upside down and to it is attached a light pole



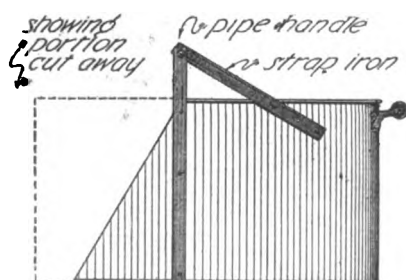
Showing How the Scraper May Be Operated from the Tractor Seat.

which extends to the tractor seat. If the load in the scraper is not too heavy a pull on the pole will tilt it so that the momentum of the tractor will cause it to turn over and dump. When there is an extra heavy load in the scraper the chain shown at the back of the scraper is attached to the tractor. By driving ahead this will cause the scraper to dump. I have used a scraper like this for two years back of my Fordson tractor and I find it works very satisfactorily.—EARL TALBOT, Tulare, Calif.



A Scoop for Filling Grain Bags

ONE time we had a lot of seed corn to sack. The one scoop shovel on the place was too small to do the job easily and we made a scoop for the purpose from an old wash boiler of sturdy materials.



—THE BOILER SCOOP

Scoop for Filling Sacks with Grain.

\$1 for an Idea

I, Handy Andy, am famous, because I am found on nearly every farm. When some little thing that would make farm work easier pops into my head I get to work and build it. Farm Mechanics has asked me to pass my ideas along, so as to help everyone do things more easily. I want to pass your ideas along, too. Send them to me, using not more than 200 words, and a pencil sketch or photograph to illustrate it. I will send you \$1 for every idea accepted. Address your letter to me.

HANDY ANDY,
Care Farm Mechanics,
1827 Prairie Ave., Chicago.

One end was cut away at an angle and two pieces of strap iron run up each side from the bottom four inches past the top. Rivets held them in place. Then two shorter pieces were riveted near the top so that the ends met. These were then drilled for a quarter-inch bolt and a length of small-diameter gas pipe placed between them and the bolt inserted, thus forming the handle.

It will be seen that the front of this scoop forms a good shovel, while, with the original handle left on the boiler, two handles are available. This will be especially handy in shoveling oats and light grains, tho it may be used for any purpose such as filling sacks, etc.

By partially filling this scoop, it can be used to carry things in by grasping the pipe handle. The drawing shows a side view.

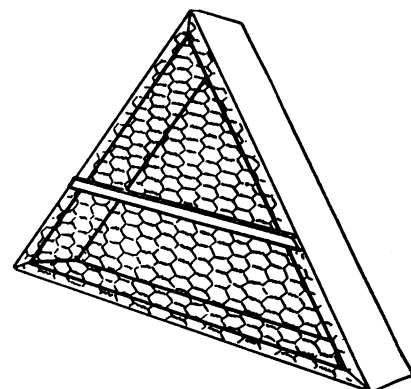
If the edge shows signs of weakening after much usage, it can be reinforced by riveting a thin piece of strap iron along this edge on the under side and sharpening the front edge slightly.—D. R. V. H.



Protects Young Chicks

YOUNG chicks oftentimes pile into a corner and are killed. The accom-

panying drawing shows a simple device that will keep them out of the corners of the yard. The triangle is made of pieces of 2 by 4s nailed securely together.



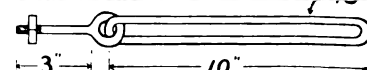
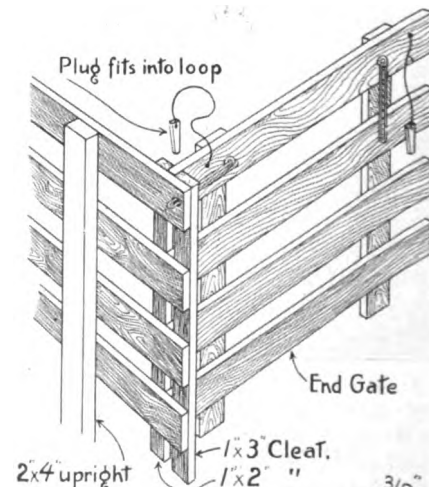
To Keep the Chicks from Piling Up in the Corners of the Yard.

The whole is covered with 1-inch poultry netting. A lath is nailed across near the center to make it more rigid. This triangular screen is leaned against the corner of the yard.—ROGER HIGGINS, Chillicothe, O.



End Gate Fastener

THE trouble of hunting for the end rods that are generally used on stock rack bodies and which usually are misplaced is eliminated by using the method of holding the sides and ends together shown



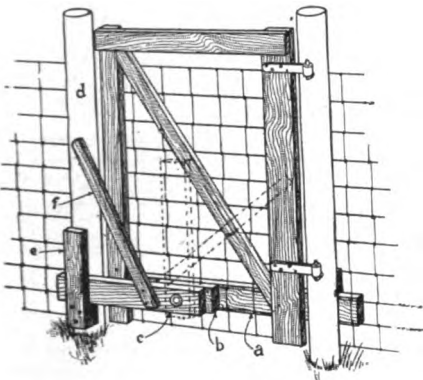
Wagon End Gate Fastener.

in the illustration. Have a blacksmith make four irons as shown at the bottom. Fasten these to the rack so that the ends will go thru holes made in the end piece. A plug, attached to a piece of rope or wire, is pushed thru the loop in the end of the fastener and the rack is closed.—R. E. PATCHETT, Green Lake, Wis.



A Hog-Tight Gate

BECAUSE I had to enter the pen in order to feed our hogs I found it necessary to have a gate that would be easy to open and strong enough to keep the hogs in at all times. In about an hour I constructed the gate illustrated here. Between solidly placed posts I hung a stout hinged gate. As the gate swung out from the pen the hinges were placed on the outside. To prevent their

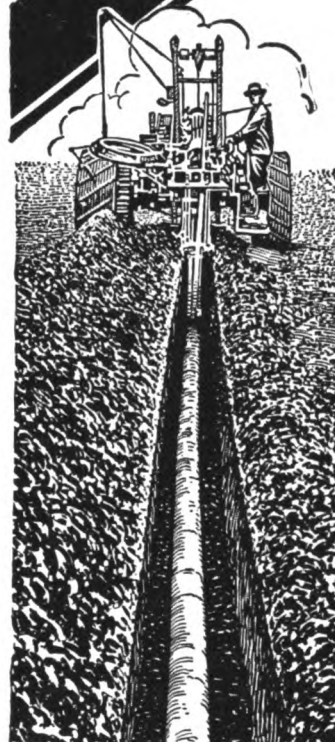


Showing How the Gate May Be Made Hog Tight.

being pried off by the hogs pushing against the gate I fastened a 2 by 6-inch piece across the bottom of the gate on the inside. This piece, "a," was flush with the end of the gate which swung out and it extended beyond the post to which the gate was hinged. I spiked a block just above piece "a" on the post. On the front of this piece I spiked block "b," which was thick enough to let the 2 by 6-inch piece "c" drop clear of the post "d" when the gate was closed. Piece "c" was long enough to drop in front of post "d" when down. Then thru "a," "b" and "c" I bored an inch hole and ran a $\frac{5}{8}$ -inch bolt thru it with washers at each end. On post "d" I fastened a spacing block a little thicker than piece "c" and just high enough to keep "c" level when down. To this spacer block I spiked "e," which prevented the gate being opened when "c" was down in place. Last of all, to piece "c" I nailed a stout stick, "f," at an angle as shown in the sketch. This was the handle. To open the gate I simply swung back the handle, which was easy because of the leverage it gave on piece "c." When "c" swung into the vertical position the handle rested against a

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WE HAVE started hundreds of men—farmers and farmers' sons—in the big-money business of ditching. No end to the work to be had. No real limit to the profits!

Right in your locality—spare time or full time—you can do what others are doing everywhere. That means net earnings of five thousand dollars a year or more. It means a business of your own *with work always waiting*. It means interesting work that is easy and requires no experience.

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BUCKEYE
Traction Ditcher

This ditcher cuts through frost and hardpan. It gives you 100 to 150 rods of ditch each day—every foot clean, smooth, true to grade and ready for tile. Furnishes its own power. Operates well in swampy land.

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Write us today. Tell us the soil conditions in your vicinity and average depth of ditching. We will then send you a free copy of our big book, "Dollars in Ditches." And our service engineers will tell you the exact size ditcher you need. They will show you how to get started *right*—show you how others make big money—and *how you can make it too*.

Write today for full details. No obligation.

The Buckeye Traction Ditcher Co.

538 Crystal Ave., Findlay, O.

(8)



RIFE
Hydraulic
RAM

RIFE ENGINE CO., 143 Cedar Street, New York City

WATER WITHOUT FUEL

WHY USE gasoline, coal and oil when your water can be pumped without the cost of either. The prices of all are advancing steadily. Now is the time to economize by using labor-saving and expense-free machinery.

The Rife Hydraulic Ram will give you a permanent water system without care, fuel or upkeep—if you have a spring or stream on your farm with a fall of 3 feet or more and a flow of 3 or more gallons a minute.

The Rife Ram works day and night, winter and summer. It requires no repairs and no labor; there is nothing to get out of order. Someone near you is using a Rife Ram and will verify this.

Our experts will advise you fully how to install and use the ram. This service is yours for the asking. Write today.

Use the Quick Sales Department
For Quick Results

The Grainger Pumps

Best on the Market

**BOILER FEED PUMPS
GENERAL SERVICE PUMPS
TANK PUMPS
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VACUUM PUMPS**

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**J. J. Reilly Manufacturing
Company Incorporated**
North Tenth St., Louisville, Kentucky

No More Rats!



You can quickly exterminate both rats and mice by just crumbling up a little Rat Bis-Kit. The pests scurry off to die out-of-doors after a few nibbles at

Rat Bis-Kit
No trouble; no muzz; no mixing; no spreading. Large size, 35c; small size, 25c. Remember the name: Rat Bis-Kit.

Also manufacturers of Rat Bis-Kit Paste in tubes, 25c. Ask your druggist—if he cannot supply you, send us his name and address and he will get it for you.

THE RAT BIS-KIT CO., Springfield, O.

Deafness



Perfect hearing is now being restored in every condition of deafness or defective hearing from causes such as Catarrhal Deafness, Relaxed or Sunken Drums, Thickened Drums, Roaring and Hissing Sounds, Perforated, Wholly or Partially Destroyed Drums, Discharge from Ears, etc.

Wilson Common-Sense Ear Drums
"Little Wireless Phones for the Ears" require no medicine but effectively replace what is lacking or defective in the natural ear drums. They are simple devices, which the wearer easily fits into the ears where they are invisible. Soft, safe and comfortable. Write today for our 168 page FREE book on DEAFNESS, giving you full particulars and testimonials.

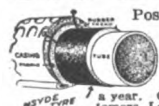
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Install **HOESS HUMANIZED PISTON RINGS** this time, save gas and oil and have greater power.

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Positively prevent punctures and blow-outs. Give double tire mileage, any tire—old or new. Use over and over again. Old worn-out casings will give three to five thousand miles more service. Car owners save \$50 a year. Over one hundred thousand satisfied customers. Low priced. Special representatives wanted.

AMERICAN ACCESSORIES CO., B-1236 Cincinnati, Ohio

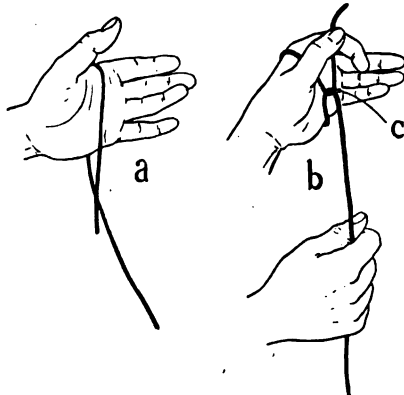
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large spike driven into the brace on the gate and the lock was held open as indicated by dotted lines "c" and "f." Upon entering the pen it was very easy to lock the gate again by simply tipping the handle back when the piece "c" would fall into place. This gate served for years, while other gates we had tried usually lasted only a few days.—WM. ARE, Maplewood, Mo.



Breaking Stout Cord by Hand

TO break heavy string or cord with the hands is a knack easily mastered. It does not require great strength, it is not necessary to injure the hands doing it and much time can often be saved by learning the trick of it. Lay the short end of the cord over the palm



Diagrams That Show How Stout
Cords May Be Easily Broken.

of the left hand. The short end should be on the inside of the palm as shown in sketch a. Next grasp the long end of the cord with the right hand and grip the short end between the thumb and forefinger of the left hand as shown in sketch b. Pull the cord taut, grip the short end tightly, then with the right hand give a smart jerk. The cord will be nearly severed at the point c where it is looped over itself.—WILLIAM ARE, Maplewood, Mo.



To Prevent Stripping Threads

PERSISTENT leaks at a tee in a water line in the barn of one of my neighbors were a source of considerable annoyance to him. After replacing the stripped tee several times it was discovered that the vertical pipe was subjected to occasional bumps that caused the tee in the main line to swing or turn, and, as a consequence, stripped threads.

The remedy was simple and effective. Two pieces of one-inch pine, cut as shown in the sketch were nailed to the joists.

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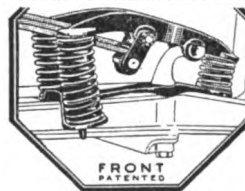
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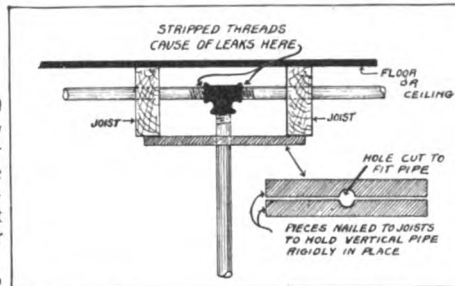
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This method is very inexpensive and the writer has noticed since that there are, in many homes, places where this



Support for Pipes to Prevent Threads from Stripping.

idea could be used with profit and satisfaction.—John H. Schalek.

Keep Trash Out of Water Pipe

WHEREVER water runs from a spring by gravity to the house and barn or to a hydraulic ram there is always the possibility of trash entering the pipe line and giving trouble.

The illustration shows how a Pennsylvania farmer solved this problem in his gravity water system. He installed a T at the end of the pipe which leads the water from the reservoir or tank at the spring to the house.

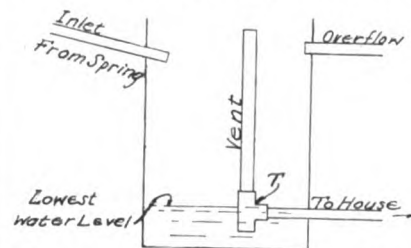


Diagram of Method of Keeping Trash Out of Water Pipes.

On the upper end of the T he screwed a vent pipe. This prevents the pipe from acting as a syphon. The water can never be drawn out lower than about the middle of the T.

The owner said he formerly had a strainer of copper wire net over the end of the pipe which became covered with trash and stop the water from flowing, but had had no trouble of this kind since employing the T a good many years ago. Of course, the trash floating on the top of the water ought to be cleaned off from time to time to prevent the water from becoming discolored but it never enters the pipe.—R. U. B.

ONE housewife keeps a small pocket flashlight handy to the sewing machine to light the needle when she threads it.

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Ram Half the Flock, Experiments Prove

"A GOOD ram is more than half the flock," according to Frank Kleinheinz of the Wisconsin College of Agriculture. They have proved that lambs of superior mutton quality are produced from western range ewes by using good purebred rams.

The best rams that can be bought are always the best investments, and a cheap ram always proves to be the most expensive. This has been proven by mating purebred Southdown rams to western range ewes at the University Farm. Increased weight and better quality of lambs has been the result.

"It pays to use a good ram," a recent circular issued by the College of Agriculture, University of Wisconsin, Madison, describes and shows pictures and results of mating western ewes to pure bred Southdown rams. The pictures show the lambs from western ewes and Southdown rams to be almost as good as pure bred lambs. Kleinheinz states that like results can be obtained by using good rams of any of the mutton breeds.

"A high class flock of sheep may be established by securing a high grade of western ewes and mating to an excellent ram of any of the mutton breeds," declares Mr. Kleinheinz. "It pays to buy an excellent ram. Nothing is gained by buying a cheap ram. Well developed, low-set, and smoothly made rams with a lot of masculinity should be selected to mate with western ewes in order to correct the rangy type common to western ewes. Investment for buying a flock of good western ewes and a pure bred ram would be small."

Auto Engine Makes Farm Power Plant

AFTER an early model auto of the planetary type had seen several years of very active service, it was declared ready for the discard. Upon close examination, however, the engine was found to be in good shape.

So it was fitted with over-sized piston rings, and, together with the radiator, transmission and operating levers,



An Old Auto Engine Turned Into a Power Plant.

was installed in a farm shop and for some time has proved very efficient as a stationary power plant. Upon test, it has repeatedly shown a little in excess of 12 horsepower, on the belt.

The frame was built up of 2 by 4's and then boarded up on the four sides with matched lumber, the top being finished with a 2 by 4-inch plate to which the engine was bolted.

The transmission shaft was lengthened by using an inch steel shaft supported by two ceiling bearings of the adjustable type. To this extension a pulley eight inches in diameter and with a three-inch face was keyed. From this pulley power is transmitted by belt to whatever machine is to be used. At the present time it is connected to a feed grinder.

The gas tank was also salvaged and supported over the engine as shown in the photo. Obviously, several speeds are readily obtainable by depressing the foot levers. These are held in place by a leather strap by which it is drawn down and secured.—DALE R. VAN HORN.



Inoculation Robs Air Enriches Mother Earth

INOCULATION robs the air of nitrogen. Inoculation of soybeans with bacteria increased the yield 1,787 pounds for each acre, or more than three times the yield on the untreated plot, according to experiments on sandy soils conducted by E. B. Fred of the Wisconsin College of Agriculture.

Treatment of soybeans with nitrogen fixing bacteria resulted in a gain of 57 pounds of nitrogen to the acre. This nitrogen was taken from the air. About 87 per cent of the gain was in the tops

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NOTICE TO ADVERTISERS

Forms for the October number of Farm Mechanics will close promptly on September 15. New Copy, changes and orders for omissions of advertisements must reach our business office, 1527 Prairie Ave., Chicago, not later than the above date. If new copy is not received by the 15th of the month preceding date of publication the publishers reserve the right to repeat last advertisement on all unexpired contracts

FARM MECHANICS.

of the plant. Soybeans from the plots treated with bacteria contained 65.36 pounds of nitrogen, or eight times as much as those from the plots without bacteria, which contained only 8.33 pounds of nitrogen.

The soil for the experiment was a light sand, low in fertility, especially nitrogen. One-half of the field was planted with Ita San soybeans with nitrogen fixing bacteria. The other half was planted with the same kind of beans without the bacteria. Both plots received the same treatment.

After the soybeans had been harvested rye was planted on the plots. A much greater growth and a better color was observed on the plots where the inoculated beans had grown. This growth was accounted for by the difference in the nitrogen content of residue of roots and tops of the beans left on the plots.

ONE housewife sorts her soiled clothes for washing first for color, second for fiber, and third for weight and use.



THREE tablespoons of raw linseed oil, one tablespoon of turpentine, and a quart of hot water make a good polish for mahogany.



RECIPES kept on cards and filed alphabetically are easy to use and the system allows for expansion and revision.

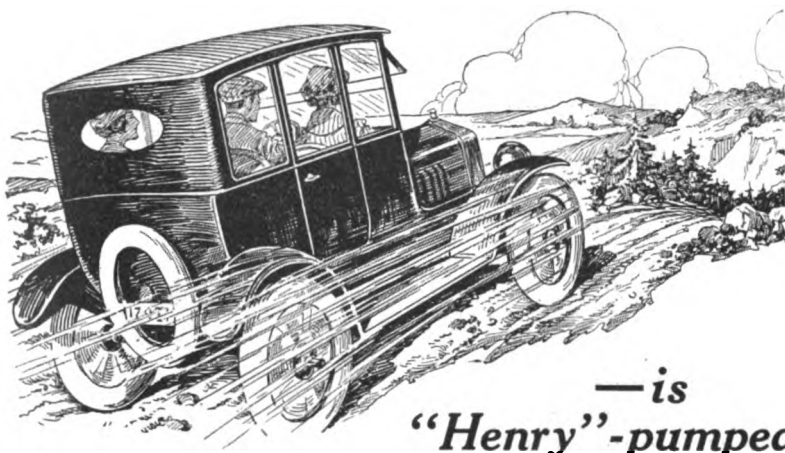


AFEW cans of sour milk take the profits out of the month's milk check.



DON'T worry about the color of cheese. Cheeseologists say color has little to do with flavor or quality.

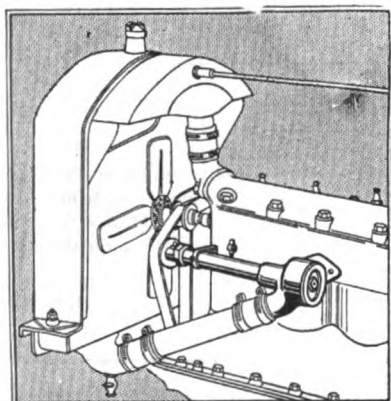
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OVER long hills—through sand and mud—mile after mile at top speed under a blazing sun—with never a knock or a wisp of steam! "Henry"-pumped Fords *can't* overheat—the engine stays cool and powerful under all conditions.

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We send "Henry" on trial—satisfaction guaranteed or money back! Install it yourself in 15 minutes. Price, complete with fan belt and capscrews, \$7.50—in Far West or South, \$8. Use coupon below.

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Pumps are going strong now. You can make big money on "Henry" sales. Easy to sell—winter and summer. Write for particulars of unusual merchandising plan, backed by big factory. Liberal profits. Mail the coupon below for a sample pump and get started on this money-maker now!

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C. O. D.—if not satisfactory I will return pump after 10 days trial and you will
refund money.

Name.....

Address.....

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WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS



All Modern Conveniences

Irene was making her first visit with some relatives in the country.

One afternoon she went with her aunt thru a stock pasture, and they passed a windmill. It was turning rapidly. The tank was overflowing, and some pigs were standing contentedly in the small pools of water on the ground.

In speaking about it afterwards, Irene said: "Uncle is awful good to his pigs. They have a bath and a 'lectric fan."—Holland's Magazine.



Largely a Matter of Weight

"Well, Sandy," said the laird, "you are getting very bent. Why don't you stand up straight like me, man?"

"Eh, man, do ye see that field o' corn over there?"

"I do," returned the laird.

"A' well, ye'll notice that the full heads hang down, an' the empty ones stand up."



Poor Missus!

An old farmer and his wife drove to market in a spring wagon one very wet day, when large pools of water had formed in the ruts and hollows of the very rough roadway. On the return journey he was met by an old friend.

"How are ye today, Silas?" was his friend's greeting.

"Just tolerable, thank ye, Abner."

"And how is the missus?" continued his friend.

"She ain't complainin'," answered the farmer. "She's settin' on the back end there," he added, jerking his thumb over his shoulder.

"Land sakes, Silas!" exclaimed his friend, with astonishment, "there ain't nobody settin' on the back end!"

The old farmer turned around and gazed curiously at the back of the wagon. Then shifting his cud of tobacco, he remarked calmly:

"Humph! That accounts for the splash I heard about a mile back."



A Modest Start

"Has your new son-in-law any live-stock to begin farming with?" inquired the village gossip of Uncle Jeremiah Snodgrass.

"Well, he's got my goat," replied Uncle Jeremiah, as he gave the off-horse a vindictive cut and went rattling out of town.

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CHICAGO, ILLINOIS

OCTOBER
1922

PRICE 20 CENTS
PER COPY

FARM MECHANICS

TITLE REGISTERED, U. S. PATENT OFFICE

A Monthly Magazine Featuring Farm Improvements
Machinery, Equipment, Farm Buildings



Richards-Wilcox
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MULTIFOLD WINDOW HARDWARE

Slidetite

GARAGE DOOR HARDWARE

BARN DOOR HARDWARE

MOUNTED GRINDSTONES

R-W



6.0
0.9

6.0
0.9

MADE IN U.S.A.

36 TONS OF WATER DAILY

OR 360 GALLONS PER HOUR IS THE
PUMPING CAPACITY OF THIS—

Powerful DURO Unit System

THE FARM PUMP

You can have water under pressure on your farm.

Plenty water without effort for thirsty stock at the barn, for the garden and lawn—and for fire protection.

Get Duro Installed before cold weather — running water everywhere — for bathroom, toilet, laundry, kitchen and garage.

Operates from small farm lighting plants or from high tension lines.

Saves time and labor—increases the milk yields—fattens the live stock—gives you an extra hour in the field—keeps your place sanitary, clean and healthful.

Easy Payments

A small down payment—the balance at your convenience. Let Duro save money, increase profits, and pay for itself.

There is a Duro Water Pressure System installed near you—ask us where you can see one.

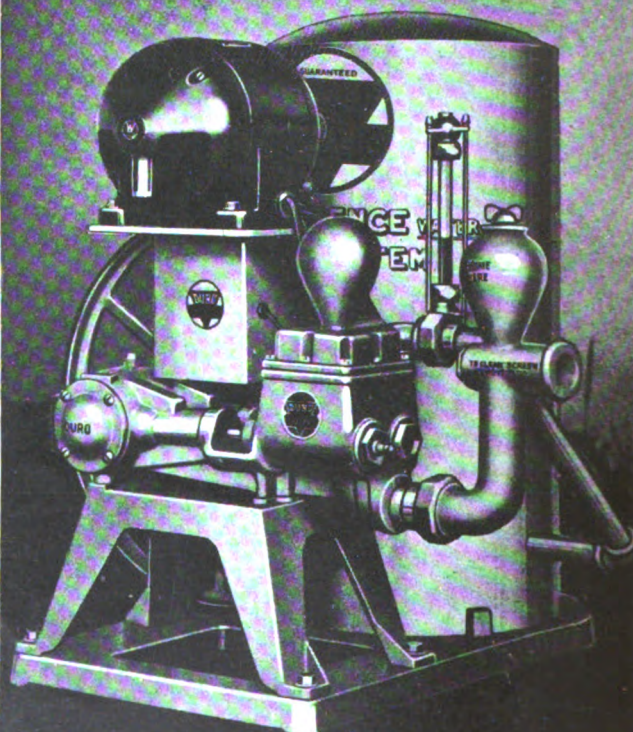
“Can you afford not to install Duro?”

WRITE TODAY FOR CATALOG NO. 33-F.

The Duro Pump & Mfg. Co.
Dayton, Ohio

Price Complete **\$150⁰⁰**
Easy Payments

Other Smaller Water Pressure Systems Complete for as low as **\$99.50**





Your kitchen, if you please

A happy efficiency spreads to every corner of the farm when the Kohler Automatic Power and Light Plant first sets up its quiet hum.

At a finger's pressure lights wink on—brilliant, unwavering, safe. Power flows for washing, ironing, and sewing; for milking, cream-separating, and churning; for grinding tools and sawing wood; for delivering running water to the modern kitchen and bathroom.

The Kohler Automatic starts on the

turn of a switch anywhere. It supplies far-carrying 110 volt current (city standard) up to 1500 watts (2 electrical horsepower)—direct from the generator, not through costly, wasteful storage batteries.

The Kohler Automatic is a time-tested, perfected unit. With its economical four-cylinder motor and many exclusive features it still costs no more than you are asked to pay for ordinary plants. You can buy it on convenient terms. Write today for our interesting booklet No. 82.

KOHLER OF KOHLER

Kohler Co., Founded 1873, Kohler, Wisconsin

Shipping Point, Sheboygan, Wisconsin

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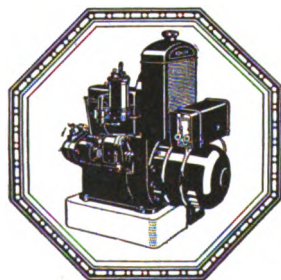
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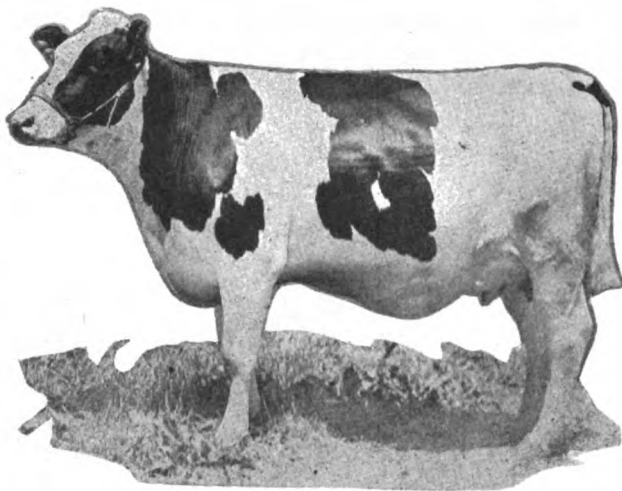
MANUFACTURERS OF KOHLER ENAMELED PLUMBING WARE

KOHLER AUTOMATIC POWER & LIGHT

110 VOLT



D. C.



Pabst Creator Acanthus

A Daughter of Creator

Record—7 days at 2 yrs. 10 mos.

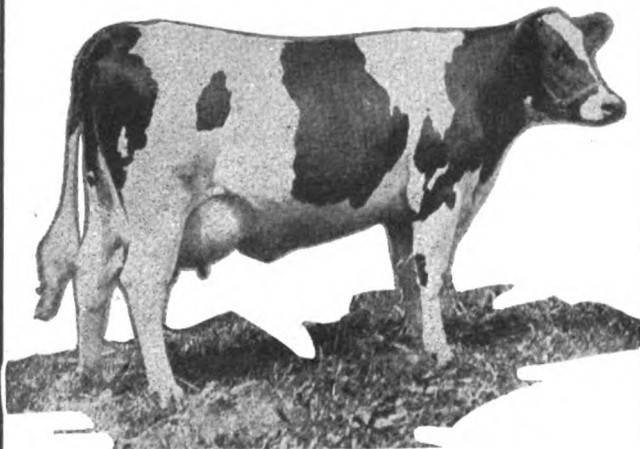
Butter..... 22.90
Milk..... 441.1

Creator at 4½ yrs. old has over 100 daughters in our herd. His first 5 daughters to freshen have each made over 20 lbs. of butter in 7 days from over 427 lbs. of milk. They average

Butter..... 21.80
Milk..... 451.9

at average age of 2 yrs. 3 mos.

Buy a brother to these great heifers to head your herd.



Pabst Marigold 3rd

A Daughter of Creator

Record—7 days at 2 yrs. 1 mo.

Butter..... 20.35
Milk..... 469.70

PABST STOCK FARM

OCONOMOWOC, WIS.

*Herd Under Federal and State Supervision
Just Passed Clean Test*

Copyright, 1922, by Farm Mechanics Company.
Title Registered in U. S. Patent Office.

FARM MECHANICS

MONTHLY FARM MAGAZINE ON TRACTORS
FARM MACHINERY, BUILDING IMPROVEMENTS AND
MODERN AGRICULTURE

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October, 1922

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The New Idea Spreader Co.
Coldwater, Ohio

Gentlemen:
Please send me more facts on your new low-priced
B-3 model New Idea.

Name.....

Address.....

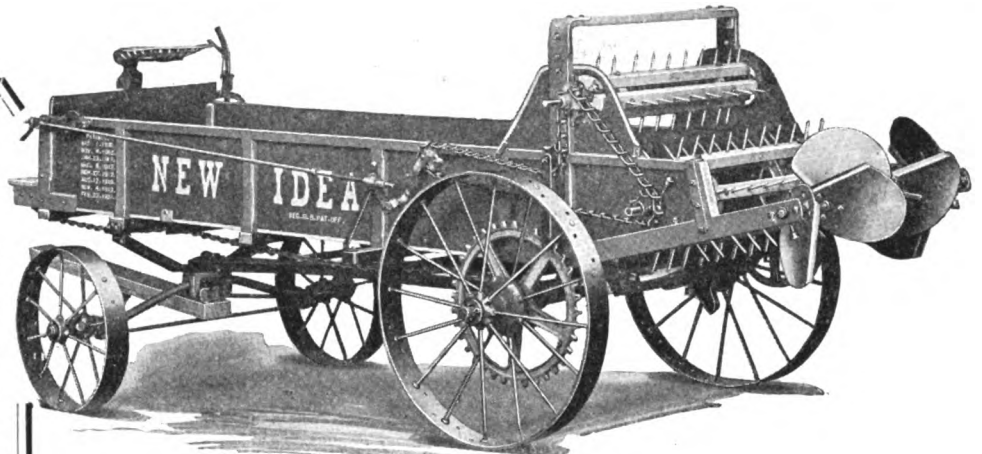
Mail This Coupon For Full Facts on the New, Low-Priced NEW IDEA

Actually Does Better Work

The New Idea Spreader pulverizes perfectly. It beats and shreds every scrap into fine particles and spreads its load lightly in a thin, even blanket, seven feet wide. No bare spots—no spots too heavily manured.

The New Idea is the *original* wide-spreading spreader. It is light draft, easy to load and built for years of service. It is strong, sturdy, always on the job. It saves time, energy, work—and gives you the last bit of soil-building value that lies in the manure.

The New Idea is the *safe* spreader to buy—the product of "Spreader Specialists"—a standard implement of known quality.



YOU'LL be surprised at the low price on this new standard B-3 model New Idea Spreader.

When we say it is a standard *New Idea outfit*, you know that it *must* be a quality machine throughout. For the name NEW IDEA has come to stand for all that is good and honest and efficient in the spreader field.

If you plan, as you undoubtedly do, to spread your manure this fall and winter instead of letting it pile up over the cold months and lose its valuable elements; if you plan, as you undoubtedly do, to spread it the modern, easy way, by machine—it *will pay you big to investigate this new model B-3 New Idea Spreader.*

It is built to spread manure better and more scientifically; to last longer and haul easier; to give you the utmost in spreader satisfaction. *And it sells at a new low price that will astonish you!* Use the coupon above for full information.

The New Idea Spreader Company

"Spreader Specialists"

COLDWATER

OHIO

NEWIDEA

Original Wide Spreading Spreader

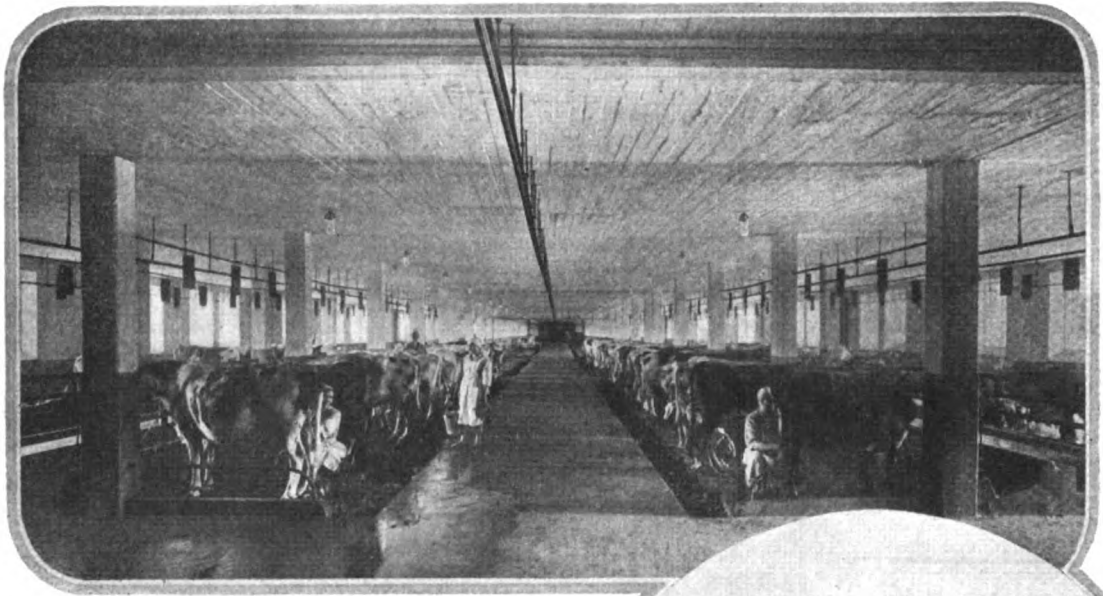
"New Idea" and "Nisco"—two trademarks representing spreaders that are identical in quality, principle, in design and mechanism, except for some minor differences in running gear which adapt them to varying field conditions in different parts of the country.

NISCO

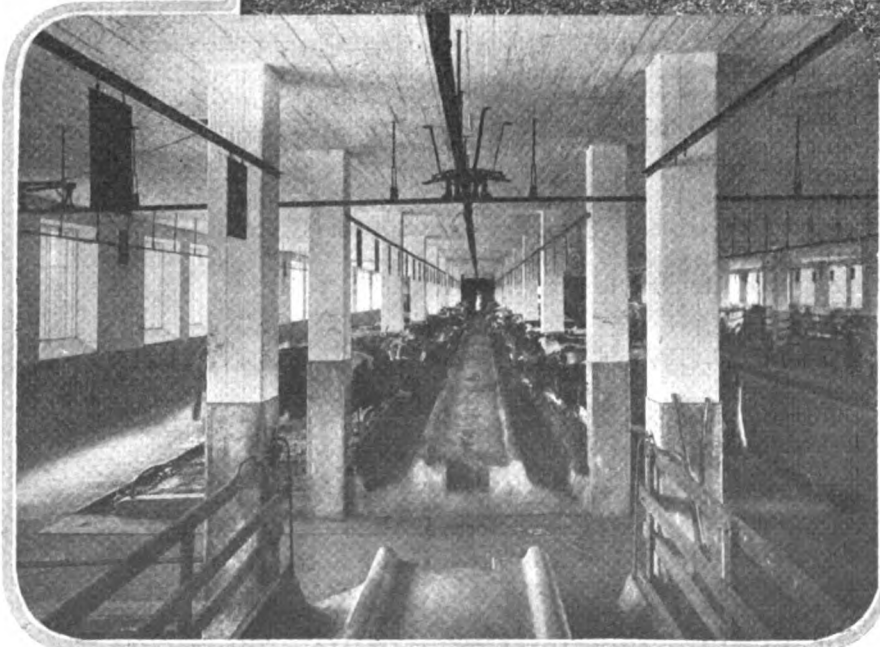
Original Wide Spreading Spreader

NEWIDEA
Registered U.S. Pat. Off.

The Original Wide Spreading Spreader



Here are three photographs that show how they build dairy barns in Finland. The photographs were furnished by Frosterus & Gripenberg, the architects who designed the barn and other buildings on the farm, which is near Helsingfors, Finland.



At the top is a picture looking thru the litter alley at milking time. One suspects that some of the milk maids changed from the right to the left side of the animals so that they would get into the picture. At the bottom is a view thru the feeding alley. A careful study of the picture will show that modern equipment and exceptionally substantial buildings are used by the dairymen of Finland.

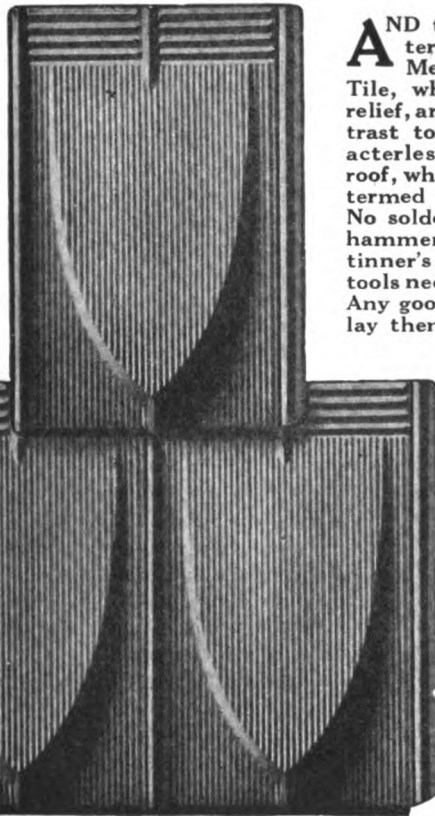
TRADE TITELOCK MARK

METAL SHINGLES AND TILE

Fire and Lightning Proof

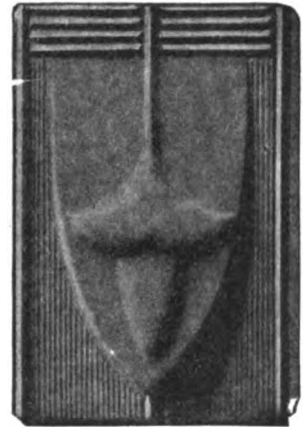
WIND AND WATER TIGHT

THERE is nothing so safe, so durable and so clean for farm building roofs as sheet metal in the various forms, as it is absolutely fire and lightning proof, when properly grounded, and there are no pebbly articles to be washed off by the rain, discoloring the water and obstructing the spouting.

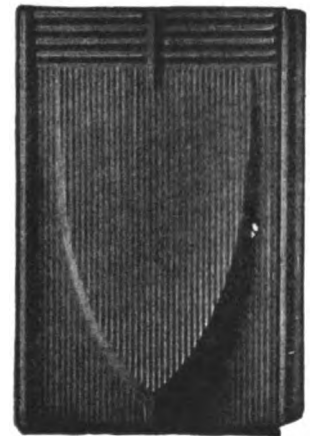


STYLE B—AS LAID

AND the artistic patterns of Titelock Metal Shingles or Tile, which are in bold relief, are a pleasing contrast to the flat, characterless composition roof, which is sometimes termed "fire-resisting." No solder is used and a hammer and a pair of tinner's snips are the only tools necessary in laying. Any good mechanic can lay them.



STYLE A



STYLE B

TITELOCK METAL SHINGLES are furnished in 1C or 1X Terne Plate, copper base, painted both sides or galvanized after formed; also in No. 10 heavy zinc and 14 or 16 oz. Copper.

For barns, etc., "Milcor" Roll and Corrugated Roofing will perhaps serve your purpose at a lower cost.

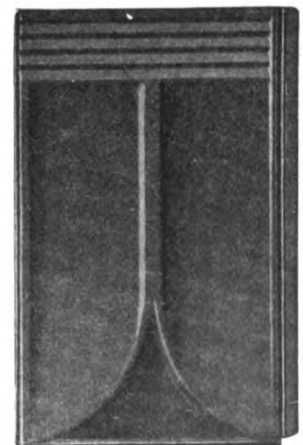
IF YOUR DEALER CANNOT SUPPLY YOU, WRITE US

*Write for Safety Roof Circular
showing all styles Titelock Metal Shingles
and Tile and appropriate roof trimmings.*



**MILWAUKEE
CORRUGATING
COMPANY**

Kansas City MILWAUKEE Minneapolis



STYLE C



It will not be many months before the poultrymen of the country will be sending their best birds to the National Poultry Show, which is held each winter in New York City. The picture at the left is a view of the pens and exhibits during the 1922 show.

Below is a 1922 view of a 15 horse-power tractor that was built and sold in 1907, one of the first to be built. Altho this tractor has changed hands several times, it now is in use regularly by Hintzman Bros., Marine City, Mich., who use it for all sorts of custom work, including hauling a road scraper for the road commissioner.

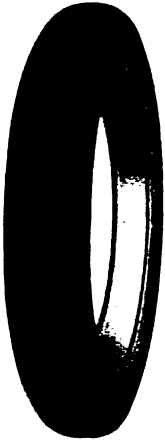
Most all know how a big fire looks from the side lines, but here is how it looks to an airman. This picture was taken recently during one of the largest fires of the year in New York City, and gives a good idea of the intensity of the fire and the tons and tons of water the firemen were pouring into the building to stop the blaze.



"Blair Bargains"

IN AUTOMOBILE and RADIO SUPPLIES

We offer the following up-to-date supplies, for immediate shipment from stock, on receipt of the price:



"Pyramid" Brand Spare Tire Covers. Perfect fit for all sizes. Cover tire and not rim. Choice of 4 grades—all in plain black:

1. Black enameled drill, bright grain finish.
2. Black imitation patent leather.
3. Grain-finish imitation leather; will never crack.
4. Long-grain leatherette; will never crack.

Prices, by Parcel Post, Prepaid

Grade No.	30x3 1/4	31x4	32x3 1/4	32x4	32x4 1/4	33x5	34x4 1/4	35x4 1/4	35x5	Over 35
1.....	\$2.00	\$2.20	\$2.50	\$2.80	\$3.10	\$3.40	\$4.90			
2.....	2.70	2.90	3.30	3.70	4.10	4.50	6.00			
3 & 4..	3.60	3.80	4.30	4.80	5.30	5.80	7.30			

Write for prices on covers with white tread or narrow white stripes in seams. In ordering give size and grade wanted. We also quote on special lettering—name of car and town.

"Pyramid" Radiator Covers—with adjustable opening. Made of fine quality dull black leatherette, with bright black, artificial patent-leather edge, and thick Kersey lining. Flexible steel straps hold cover firmly in position and make a snug fit. See prices below.

"Pyramid" Radiator and Hood Covers. Method of fastening hood cover leaves engine hood free to raise and lower.

Prices, by Parcel Post, Prepaid

	Ford	Chevrolet or Dodge	Buick 4 or 6	Studebaker
Radiator cover only.....	\$2.95	\$3.75	\$3.75	\$ 4.75
Radiator and hood cover.....	5.00	7.25	8.00	11.00

Write for quotations on both styles for other cars.

Batteries for Automobiles or Radio

Automobile Battery, 6 volt, 100 ampere hours.....	\$20.00
Automobile Battery, 6 volt, 80 ampere hours.....	16.00
Radio A Batteries.....	Same as above
Radio A Dry Battery, re-chargeable.....	\$ 5.50
Radio B Dry Battery, non re-chargeable.....	2.85

All batteries high class, made of best of materials; workmanship guaranteed.

Crosley Radio Sets. "Better—Cost less." Developed in Crosley plant by their own engineers; manufactured in large quantities by special machinery and sold at a very narrow margin of profit.

Crosley Harko Senior Receiving Set, built to supply demand for low cost outfit for 125 to 500 mile service. Complete, without tubes, batteries or phones.....\$20.00

Crosley Receiver No. VI. Combines one-stage, tuned radio frequency with tuner and audion detector, enabling operator to eliminate interference. A long-distance set. Price, complete, without the tubes, batteries or phones.....\$30.00

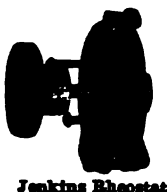
Crosley Receiver No. X. Consisting of Harko No. VI above described and two-step amplifier, combined in one handsome cabinet. A long-distance receiver of great power, using 4 tubes, easy to tune, and giving satisfaction for both nearby and distant signals. Complete without tubes, batteries or phones—by express, prepaid.....\$55.00

Send for the Crosley catalog, giving full details of these and other sets, as well as independent units and parts.

"Basco" Head Phones. Comfortable, giving clear reproductions of signals. By parcel post, prepaid.

2000 ohms—\$6.00
3000 ohms— 7.50

Jenkins Vernier Rheostat. Indispensable for fine adjustment on radio frequency and detector tubes.....\$1.75



Jenkins Rheostat

Ekko Phonograph Adapter—to attach head phone to tone-arm of your phonograph. Uses any make of phone. Most satisfactory way of hearing radio. Price, by parcel post, prepaid\$3.00



"Thorophone" High-power Radio Loud-speaker, has the clearest tone qualities of any Loud-speaker. Signals may be made loud enough to fill a large hall or reduced to the requirements of the home circle.

It combines the mica diaphragm such as is used on high-class phonographs, with an electro magnet which makes the sound as loud as you wish.

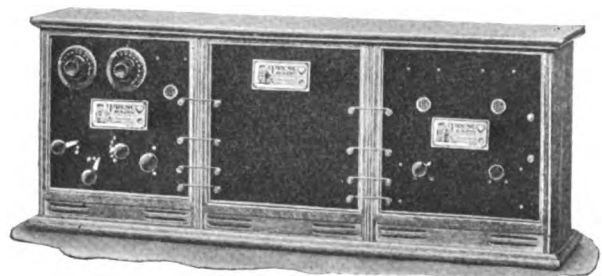
Only Loud-speaker that embodies both phonograph and telephone mechanisms.

It will lend a new joy to your Radio receiving set, enabling you to entertain a roomful of people, and bringing in distant stations that you cannot now hear at all.

We offer High Power Model S-5 Thorophone, complete with concert horn illustrated; height, overall, 28 inches, shipping weight, 30 lbs., for \$60.00.



"Tresco" Radio Set—Complete, ready to use. This famous set, made by one of the oldest and largest radio concerns in the country, is now offered, for the first time, complete, with tubes, batteries and head phones or loud-speaker horn. In order that it may be set up and started by an expert we will arrange with your nearest dealer to supply you with this complete outfit, set up, ready to receive local or long-distance broadcasting.

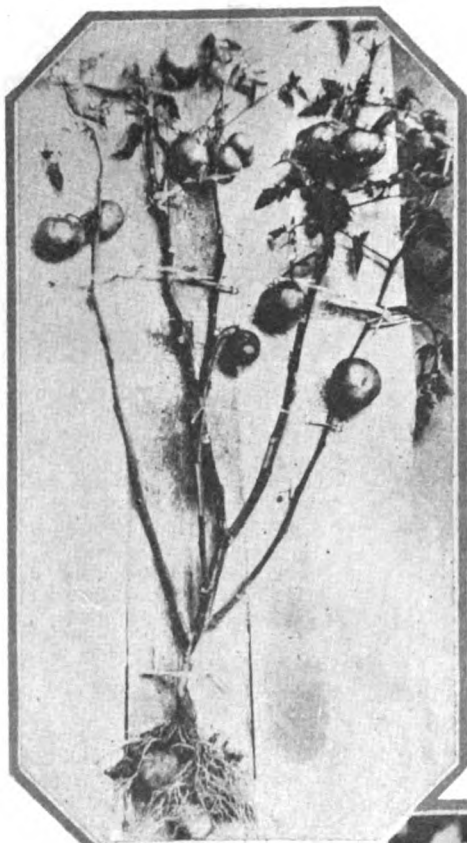


Complete with three tubes, A and B batteries, double head phone, antenna wire, insulators and lightning arrester—ready to install.....\$61.50
Same as above, but with Audio Phone Loud Speaker instead of head phone..... 104.00
Price, without batteries, tubes or head phones..... 101.50

Remit by check or money order. All goods sold on the prompt money-back plan

Mitchell Blair Co.

1429 South Michigan Ave., CHICAGO



Potatoes and tomatoes growing on the same vine. John R. Rupp, of Shiremans-town, Pa., grafted a young tomato plant onto a potato vine, with the result that potatoes grew at the roots and tomatoes at the top.



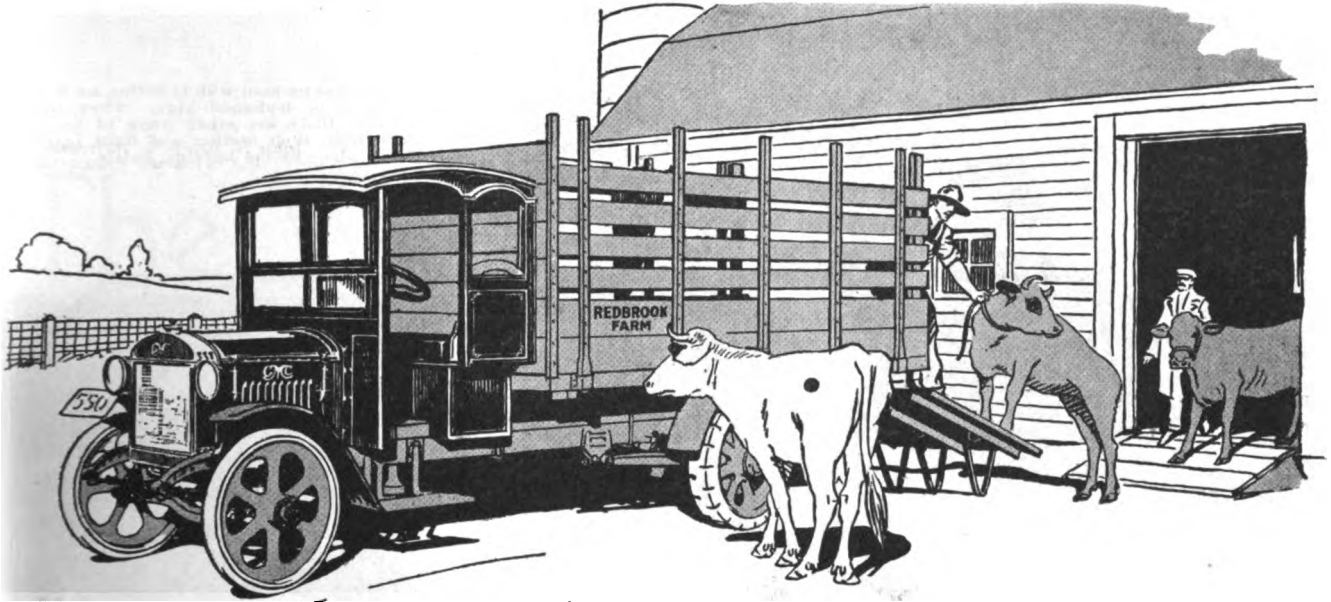
Here is a clock that will run 10 years without attention. Its motive power is furnished by a small battery. The picture shows the clock and the young Frenchman who invented it and is doing a good business retailing it at \$40 per clock.



Ostriches have a trait in common with humans—stolen fruit is the best. The attendants at a California ostrich farm feed the animals their daily rations, one of which is an orange. However, the birds evidently do not await meal time, but help themselves.

On August 12 notables in the horticultural and pomological fields gathered at Winterset, Ia., to dedicate a monument to commemorate the fiftieth anniversary of the discovery of the original "Delicious" apple tree. This tree was a seedling that just "grew" but from it there has been grown thousands upon thousands of this famous apple tree. The photograph shows Paul C. Stark, vice-president of the American Pomological Society holding a well-filled branch of the tree, which, it will be seen, continues to bear heavily.





Model K41—Two Ton

\$2375

Chassis Only—At the Factory

GMC Chassis list at factory as follows: One Ton, \$1295; Two Ton, \$2375; Three and One-half Ton, \$3600; Five Ton, \$3950; tax to be added

Haul Stock This Fall With a GMC

Flashing along the good highways at a fast speed and also developing more pulling power in bad going than is averaged by trucks of like capacity, the Model K-41, Two Ton GMC truck, is the finest equipment yet produced for hauling stock and for other heavy work on the farm.

Like the "Jim-Dandy" one ton GMC, this truck has exclusive improvements that increase operating economy and reduce the time and expense of maintenance. Model K-41 is equipped with the GMC Two-Range Transmission, providing greater pulling power in combination with more road speed—a combination never before accomplished until the development of this distinctive feature by GMC engineers.

The Two-Range transmission has successfully multiplied economical engine power into greater power at the wheels and has opened up new fields for motor truck use, both in the city and on the farm. With this transmission a GMC truck will go anywhere that wheels can get traction and on good roads will speed 18 miles an hour with solid tires.

It has such other advantages as GMC Removable Cylinder Walls, Pressure Lubrication, Removable Valve Lifter Assemblies, Instantaneous Governor Action, Magneto Ignition, Conduit Wiring, Thermo-Syphon Cooling, Electric Lights and Generator, Provision for Starting Motor and many other refinements not usually found on motor trucks.

Write for an illustrated booklet "GMC Trucks on the Farm."

GENERAL MOTORS TRUCK COMPANY—Pontiac, Mich.

Division of General Motors Corporation

Dealers and Service in Most Communities

General Motors Trucks



Below is a young man who is acting as foster mother to some orphaned pigs. They learn quickly that there are other ways of getting food than from their mother and fight just as hard for a place at the nursing bottle.



The value of goat's milk is being exploited thruout the country and out in California goat raising is a regular business. The picture at the top shows a young woman attendant feeding three motherless goats.

Showing the effect of a milk diet on chickens. The experiment was made in Milwaukee, under the direction of the health commissioner. Both chickens were from the same hatching, but the difference in growth is amazing.



Triplets are said to be rare in the dairy animal kingdom. Here is a cow that gave birth to triplets on a Utah farm. The photograph was taken a few hours after the arrival of the trio. All lived and thrived.



The Work of the Month



OCTOBER brings snappy weather and warns that winter is approaching. Also it is a reminder that there is much work to be done to prepare for the cold weather. Houses for the stock may need some repairs, the laying hens are put in their winter quarters and the summer's accumulation of manure gotten onto the fields. In fact, there are a great many odd jobs that may be sandwiched in between the regular work of marketing the crops.



IT IS difficult for the average man to lay concrete successfully after freezing weather sets in. Unless the builder has heaters and canvasses, it will be nigh impossible to lay concrete so that it will not scale and crumble. Consequently any that is needed should be laid as quickly as possible. Feeding floors, foundations for building of all descriptions, walks, or any of the concrete work that is to be done ought to be laid early in October, as oftentimes in the central states, and usually in the northern states there are freezing temperatures before the end of October.



WHAT about the machines? Are they under cover? This is the time when provident farmers take in the machines and tools that were left in the open under the press of work. There was not time then to take care of them; other work was more important. But now if they are taken into the implement house, cleaned carefully and the unpainted parts greased, they will go thru the winter in condition to be used in the spring or summer and will give better service and last a great deal longer.



HOG cholera is especially liable to occur in October. Watch the herd. If one of the animals tries to hide in the straw of his pen, appears chilled and arches his back, call your veterinarian at once. Hog cholera can be prevented by the use of the serums, but they should be administered by an experienced person and should be fresh and of the best quality. If the disease gets into the herd, burn the carcasses of

the dead animals, or bury them at least four feet deep. Also care should be taken to prevent the spread of the infection, which travels very rapidly and is carried by persons, the wind and streams.



IT is best not to let the sheep graze the pastures too closely in the fall. Give the grass a chance to grow and gain strength to withstand the winter. Close-grazed pastures

are very apt to winter kill in the central and northern states.



NOW that the hunting season is on a great majority of us will take a day for this sport. Observe the game laws of your state, especially those relating to quail and other small birds. These are valuable on the farms in the spring and summer, as they feed on the insects that in turn feed on the crops.



DIP the sheep before winter, if they have lice or ticks. They will get thru the cold season better if free from vermin.



LAST winter's cut of wood has been drying all summer and is ready to be hauled to the house and cut. A small swing saw belted to the tractor cuts more wood in a day than most men can cut in a week or so. This is one of the jobs that makes the tractor a valuable power plant to have around the farm. With the addition of the swing saw there also will be many such jobs for neighbors who have not the equipment.



Plenty of Wood, Piled Near the House, Is a Valuable Asset This Fall, as It Seems Certain Coal Will Be High

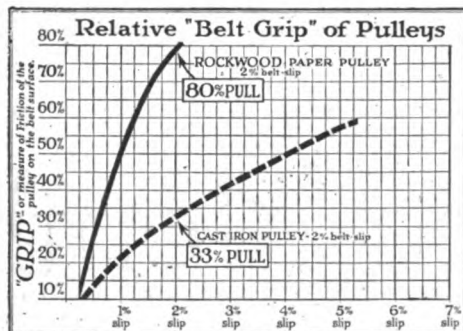


Chart showing results of tests made by Will Miller Sawdon, professor of experimental engineering at Cornell University.



Which? Pulley Will You Use?

MR. MANUFACTURER, is your tractor equipped for efficient belt work? Your answer to this question depends upon the belt pulley you use.

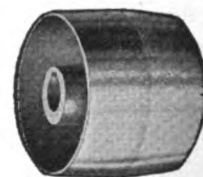
For efficient belt-work your tractor must have an efficient drive pulley—a pulley that transmits *all* the power of the engine, without trouble, on any job, and in any weather.

Such a pulley is Rockwood, *The Drive Pulley*. Because of its unique end-grain fibre construction, it grips the belt as no other pulley possibly can—transmits more power and reduces belt-wear.

Why, then, should you use any other pulley, when *only* Rockwood, *The Drive Pulley*, will give the farmer the kind of service he has a right to expect.

Rockwood, The Drive Pulley is not "high-priced"—just a good pulley at a fair price. Write for further information.

THE ROCKWOOD MFG. CO., 1950 English Ave., INDIANAPOLIS, U.S.A.



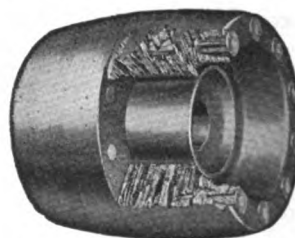
THE PLAIN IRON PULLEY

The iron pulley is inefficient because the belt slips on the surface, causing it to wear and waste power.



THE COVERED PULLEY

The covered pulley reduces belt-slip, but wear and exposure to the weather loosens the covering and it strips, leaving the sharp rivets exposed to gouge and ruin an expensive drive belt.



(Section removed to show construction)

ROCKWOOD *The DRIVE PULLEY*

Rockwood, *The Drive Pulley*, is the one efficient dependable drive pulley. It consists of a solid block of tough wear-resisting fibre (seldom less than two inches thick) built around and into a heavy cast iron hub. The end-grain is exposed as a surface to grip the belt surely and firmly—a surface made up of layer upon layer of fibre hydraulically compressed and cemented—a surface that renews itself automatically as it wears and wears and WEARS.

Rockwood, *The Drive Pulley* has no "cover" to strip. It is ALL pulley and is thoroughly waterproofed.

All the Power—All the Time

ROCKWOOD, PULLEY SERVICE



Annual Red Cross Roll Call

EVERYONE knows in a general way of the good work of the Red Cross. Wherever there is need of succor thru either personal service or in a material way, there the Red Cross workers will be found.



Poster of the Red Cross for Its Annual "Roll Call."

is the agency that always is "At the service of all mankind."

Annually the Red Cross calls upon the people of the country to supply funds for its annual needs—or, rather, to augment the funds secured quietly and without publicity. This is called the annual Red Cross Roll Call.

November 11 to Thanksgiving Day has been fixed upon as the time for the "Roll Call" this year. Volunteer workers everywhere, in cities, towns and rural communities, will make the annual solicitation for memberships, which carry with them a small amount as annual dues.

It is unnecessary to urge that this Roll Call be answered. We all know to what good purpose anything we may contribute to the Red Cross will be put. But let us be ready to respond when the call comes—November 11 to Thanksgiving Day, November 26.



Gathering Seed Corn for 1923

PROVIDED the advice of county agents, extension service workers and all others interested in agri-

culture that the seed corn be selected from the standing stalks was not heeded, the next best thing is to make the selection during husking time. No farmer can be certain that all of his seed will winter well—nor that all of it is fertile. Select well-matured ears of large size with fairly straight rows of kernels that are uniform and of good depth, with not too large a butt and with the husk protecting the tip. Hang the ears so that they do not touch one another; where they will be dry and in as even a temperature as possible. And above all select enough ears to supply double the quantity of seed needed next year.



Winter On Its Way

TIME to put up the stoves, that is providing a furnace or some other type of basement heating plant has not been installed. This is the time when the expenditure for a furnace is appreciated. There is no temper-trying work of making stove pipes fit, or is there any muss about the house. Besides, a basement plant is more cleanly, it furnishes a better distribution of heat thruout the house and costs no more to operate.



Select Well-Matured Ears for Seed Corn and Take Care in Storing It, Is the Advice of Experts.



"You Thought I'd be Homesick, but I'm Not." Writes Bill to his Dad, and Then Relates Some Worthwhile Facts About Handling Manure That He Has Just Learned from the Soil Fertility Professor

DEAR Dad: You thought I'd be homesick and want to come home before this, didn't you? Well I'm not. Two weeks here at the college have been a revelation to me. I am just beginning to learn how little I know about farming—that is of the reasons why we do certain things in certain ways at home. That's what makes it interesting. There are a lot of things, I find, that we have been doing for years and doing them the right way. But before I came up here and listened to the lectures I didn't realize why we were doing them the way we did.

Today I listened to a lecture on the right ways to handle manure so that as little as possible of the plant foods it contains will be lost. You remember when we built the new dairy barn and had a concrete floor put in, with the gutter back of the stalls, I

thought that the only reason it was designed that way was to save work. It did, as we both know. With the litter carrier running on a track overhead, the work of cleaning out the stable every day was a pleasure, compared with the old method of forking manure into a cart and wheeling it out to the back and dumping it in a pile. Then, too, we thought we were saving labor when we got the manure spreader and left it standing under the end of the track and dumped the manure directly into it. So we were. But there is one thing we overlooked. I took great pride in keeping the gutter clean and hosing it out, so that the liquids would run out the drain. That is where we are making a mistake. A great part of the plant foods are being lost in our barn. They go with the liquid out the drain.



His Intentions Are Good but a Great Portion of the Plant Foods Originally Contained in This Manure Was Lost Thru the Action of Rain and Air. However, that is to be expected of the accumulations in the barnyard. Stable manure should be gotten on the fields as fast as it is made.

I'll bet, tho, that you will be just as much interested as I was in the things the soil fertility professor said in his lecture. So I am going to write as much of it as I can remember. I know you didn't have the chance that I have to go to an "Aggie" school, as they call it here, and I'm beginning to appreciate the forethought you had in sending me. So here goes on a second hand lecture on "Eliminating a Billion-dollar Waste."

There are ten substances in the soil that make it possible to produce crops. If any one of these sub-

stance, clover and other legumes which are plowed under.

Magnesium and calcium are the two substances that are found in limestone. They are needed to make the soil alkaline, or "sweet." Unless the soil is alkaline, legumes, such as clover, alfalfa, soy beans and cow peas, will not grow, or at least will not produce good crops.

Phosphorus is a mineral element without which no life, animal or plant can exist. Phosphorus has been called the "master key to the established systems of permanent agriculture upon the soils of the United



Renewing the Fertility of the Soil Can Be Accomplished by Manure Coupled with Fertilizers. The more thinly the manure is spread the greater benefit per ton will be derived, but this does not mean that all soils should be treated alike. The manure spreader saves time and labor and gives a more even distribution.

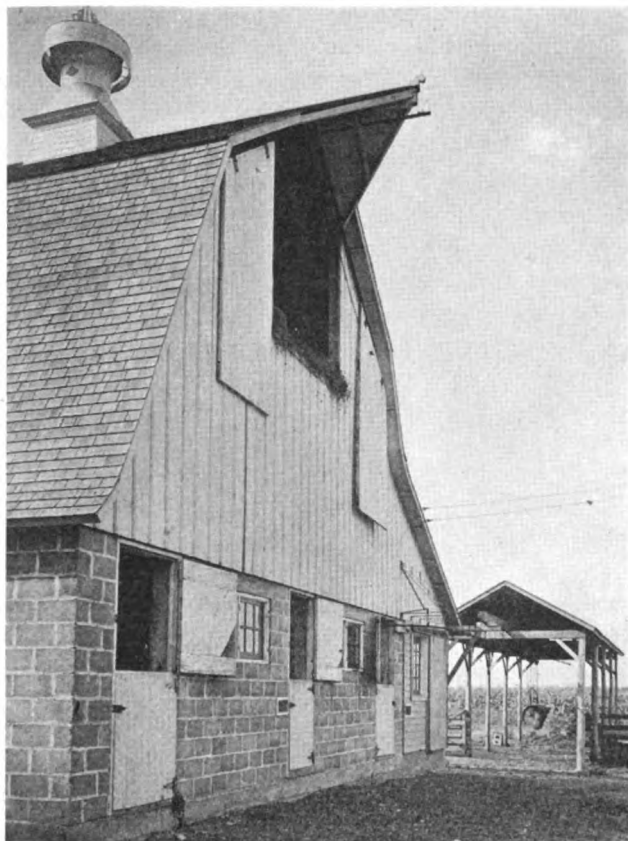
stances is missing it would be impossible to produce clover, grass, wheat or corn, or any other plant. Carbon and oxygen are taken into the plant from the air thru the leaves; hydrogen is secured from the water in the soil thru the roots. Iron and sulphur are in the soil in abundance. The other five elements are potassium, magnesium, calcium, phosphorus and nitrogen. It is these last five that every farmer should know about, as when they become deficient the soil loses its fertility and impoverished farms are the result.

Taking them in the order named, these substances affect the life and growth of plants as follows:

Potassium is used mostly in the roots and stems and gives stiffness to the straw. It is found in abundance in practically all soils, but it must be liberated for use by the plant. This is accomplished by the action of decaying organic matter, such as farm man-

States." Corn, wheat and all the other crops as well as the livestock of the farms must have phosphorus. Most soils have about enough phosphorus in them to grow good crops eight successive years. If it is not replaced, at the end of that time the yield would be practically nothing. Three-fourths of the phosphorus removed from the soil is in the grain; the other fourth in the stems of the plants. If the grain is sold from the farm—and it must be sold, at least, a part of it—the phosphorus is lost. If the grain is fed to livestock and the manure returned to the soil, only a small portion is lost.

Nitrogen is found combined with the organic matter in the soil, which is called humus. It really is the animal and plant forms in the soil that have become decomposed and that give the soil a dark color that always is associated with fertility. There is no



The Covered Manure Pit Is Better Than the Pile in the Barnyard, but Even Under Cover the Plant Foods, or a Considerable Portion of Them, Are Lost.

short method of getting this humus into the soil. It must be supplied by manure, plowing under all sorts of stubble, burying it so that it will decompose. A farmer can distribute enough limestone or phosphate on an acre of land to provide for the needs of large crops, but it requires time and constant work to supply the soil with humus.

The soil is benefitted by humus in several ways. It increases the tilth of the soil by making it crumbly and granular, thereby lessening the chances of its becoming baked and cracked, with the consequent loss of moisture. It also increases the warmth of the soil making it ready for planting earlier in the spring. It provides growing plants with the food it needs, makes it more easy for the fine rootlets to seek out its food and increases the root systems of the plants, which results in better growth of the tops.

The most common method of restoring humus to the soil and at the same time give it the plant food elements it requires is to apply barnyard manure. That part which has passed thru the animal already has started to decompose. This added to the bedding that is taken out of the stable with it makes it the chief means of restoring the organic matter to the soil. When it is considered that a ton of manure from horse or cow contains from six to eight pounds of potassium; from one and one-half to more than two pounds of phosphorus and from 10 to 12 pounds of nitrogen, besides the humus supplying elements,

it will be seen that manure becomes worth really money when it is applied to the fields.

The figures given, however, are what is contained in manure that has been handled properly—that is applied to the fields as soon as it is made. Manure piled in the barnyard loses a great part of the plant foods it contains in a short time, thru the action of water and air upon it. But the greatest loss is sustained when the urine is allowed to drain away. If this is allowed to happen fully 60 per cent of the value of the manure is lost. So you see, dad, that keeping the gutters of the stable clean, rather than filled with bedding which absorbs the liquid, is a wasteful practice.

What I learned today summed up is this: Manure is too valuable to handle in any but the most careful way. It should not be allowed to stand; neither should it be piled outdoors, or under cover even. It should be loaded right into the spreader and returned to the fields. Then the action of the rain and the sun and air help get the plant foods into the soil, and the vegetable part starts its decomposition, even tho it is not plowed under until later. They say here at school that proper management of a farm should provide that there always is a place to spread manure; that greater value is derived from it if it is spread thinly, as there is less liability of large chunks being plowed under and form clods which take time to disintegrate.

Don't you think that's a pretty fair amount of valuable information to gain in one day? And it's funny how easy it is for me to remember it. As I said before, the lecturer really was telling why we did things on the farm as we have done. But when I learned the real reasons for so doing, I began to realize the importance of doing them and doing them right. So keep the litter carrier working and the spreader going to the fields as fast as it is loaded. I know it will pay.

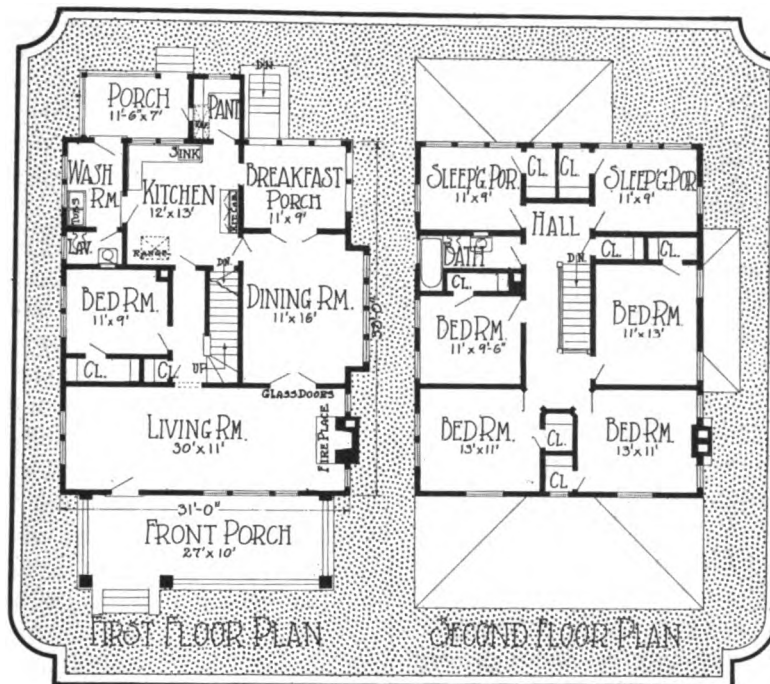
Your affectionate son,

BILL.

P. S.—Tell Ma I could use a cake when she wants to make one for me. Also have had only one letter from Evelyn, and she promised to write often.



WHEAT is comparatively cheap this year and some of the potato growers are using it as a cover crop instead of rye. This is a good practice on land which grows fairly well, since wheat has certain advantages over rye. Hairy vetch is often a good cover crop to use where conditions are favorable to its growth and where it may be allowed to grow a while next spring. It may be sown alone at the rate of about 30 pounds per acre, or the seed may be mixed with wheat or rye. In the latter case 20 pounds of vetch seed and three pecks of grain make a good mixture.



HALF-STUCCO FARM HOME. Stucco has not yet become as popular for farm homes as for houses in the city, but it makes a most attractive exterior. Here is a farm home that is part stucco, the walls above the second floor being covered with this material. This house is practically square, 31 by 33 feet in dimensions.

Profitable Crop Storage

Unusual Building Combining Corn Cribs, Granary and Feed Storage and Mixing Rooms, Provides Safe Place for the Crops and Cuts the Labor Cost of Handling Them

By JOSEPH D. EDDY

A WELL-CONSTRUCTED house for the corn and small grain crops is a paying investment for every farm. There are many types of these buildings that are excellent, ranging from the standard frame building thru the hollow tile and concrete structures, to the metal bins and houses that are on the market. These buildings have become recognized as standard types, both in materials, methods of construction and design.

However, there always is a chance for improvement. Shown on the opposite page is a design for a combination corn crib, granary and feed building that is unique, at least to the present writer, as he has never seen a plan for such a building. It was designed especially for the FARM MECHANICS Plan Service Bureau, and embodies a number of features that will appeal to the farmer who wants a building that is economical to construct and that will house his crops in a weather and rodent-proof structure. Combined with these features this building has an additional recommendation in that it cuts the labor bill of storing and using these crops to a minimum, especially if the owner be a dairyman, or a beef, cattle or hog feeder.

As will be seen by the floor plans that accompany the exterior view on the next page, the main portion of the building is what is generally termed a "high corn crib and granary." It is 26 feet wide and 56 feet long, which permits four 8-foot cribs, two on either side and a 10-foot driveway thru the center. But to this building the architect has added a feed room, connecting it with the interior of the crib and granary by a double opening. This portion of the building is an "L" built onto the center of the main building.

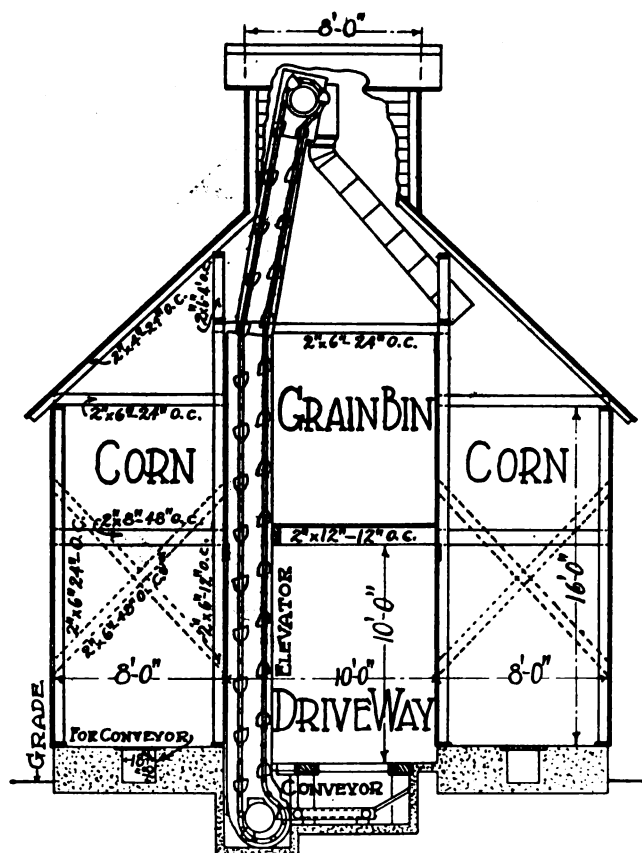
In the center of the main building there is provided a wagon dump, connecting with a power elevator, by which the ear corn is carried into the cupola and thence by a swivel spout to either of the four cribs. This same method may also be used to spout the small grains into the storage bins on the second floor, over the driveway. An architect's cross-sectional drawing showing how the elevator is framed, is shown on this page.

The "L" or feed room portion of the building has a floor that is continuous with the second floor of the main building. The grain bins are connected with chutes, thru which, by gravity, the grain may be carried to the bins on the ground floor. Here there is plenty of space for the feed grinder, which may be operated by the gas engine or electric motor that is needed by the elevator, or by hand.

The labor economy of combining the storage of grain and the preparation of feed all under one roof is apparent. There is one point, however, which the architect further emphasizes; that is the location of this building. It should be within a reasonably short distance of the dairy or beef cattle barn, or the hog barn. By placing the building in such a location, an overhead carrier track may be used to connect the feed room in the grain storage building directly with the feeding alleys of the other buildings, thereby enabling the attendant to grind and mix the feed in the feed room, load it into the carrier and take it directly to the mangers, or troughs.

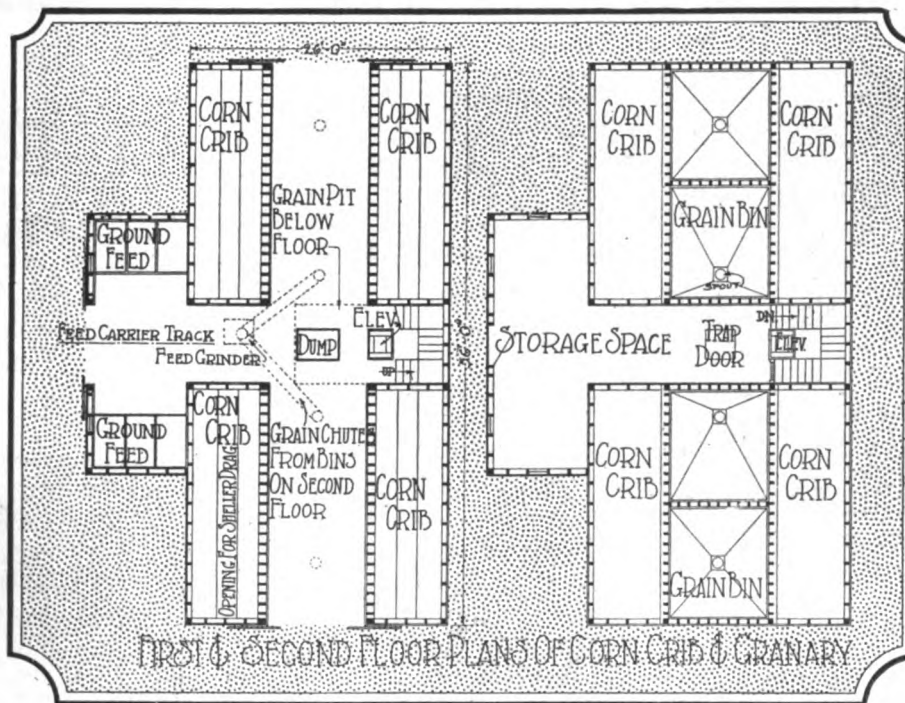
The building itself is constructed of matched and crib siding for the outside walls, sturdy timbers for the frame and is set on a concrete foundation. This provides a weather and rat-proof structure, but at the same time gives the proper ventilation in the cribs. The flooring on the second floor is of tight, matched material.

Considered from the angles of economy of labor and protection of the crops this is a farm building design that should become very popular thruout the corn belt and grain growing sections of the country.



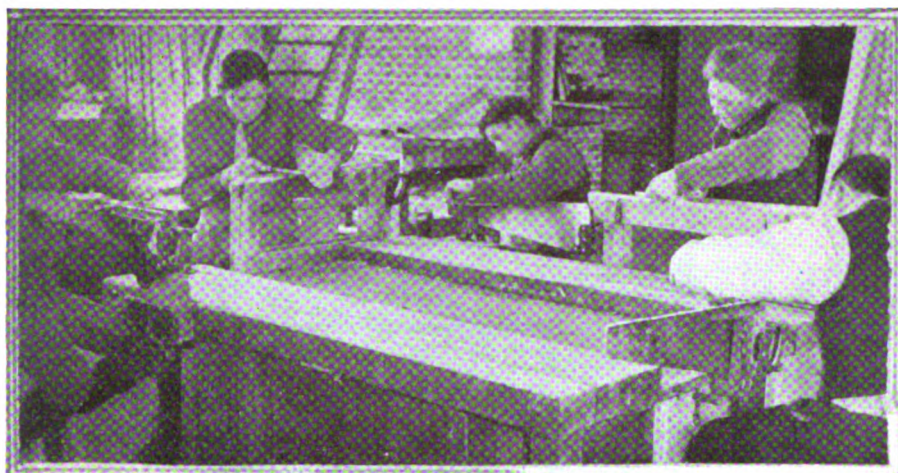
Cross-Section Thru Corn-Crib and Granary, Showing How Elevator Is Installed, and Some of the Details of Construction.

FARM MECHANICS BUILDING DESIGNS



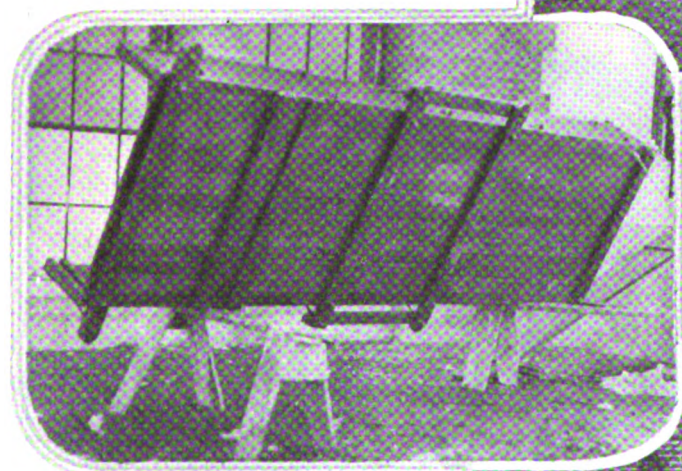
CORN CRIB, GRANARY AND FEED HOUSE. Here is a most unusual design for a combination corn crib, granary and feed house. It was designed especially for the Farm Mechanics Plan Service Bureau. Not only does this building provide a safe storage place for the ear corn and small grains grown on the farm, but also a room for the storage and grinding of the feed for the stock. A description of this building is on the opposite page.

What the Farm Boy Learns to do



There is nothing more aggravating than to try to saw with a dull saw; neither is there a greater handicap to accurate building. Filing saws is only one of the useful things the farm boy learns at the agricultural high school, the picture at the left showing the youngsters hard at this work.

Erecting small buildings about the farm is another art that is taught the boys. At the right is a saw-tooth roof chicken house that the boys at the South Cache High School, Hyrum, Utah, built under the direction of E. Perry Van Leuven, head of the manual training department.



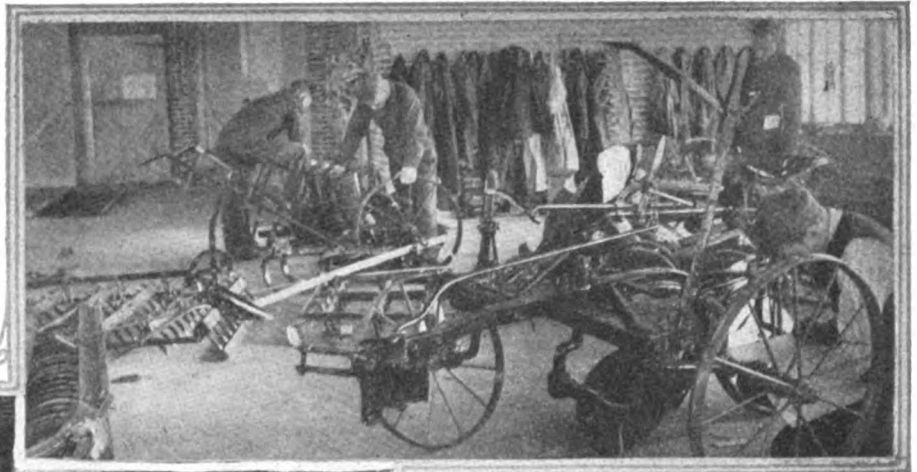
At the left is a wagon box built by the students in manual training at the South Cache High School. This is the sort of work that can be done in the farm shop on rainy days or in the winter, and the boys that study agriculture will know how after they have finished their courses.

At the right is a scene in the wood-working shop in the South Cache High School. The carpenter's benches behind which the boys are standing were constructed by them, and show how expert they become in handling tools and putting such equipment together.

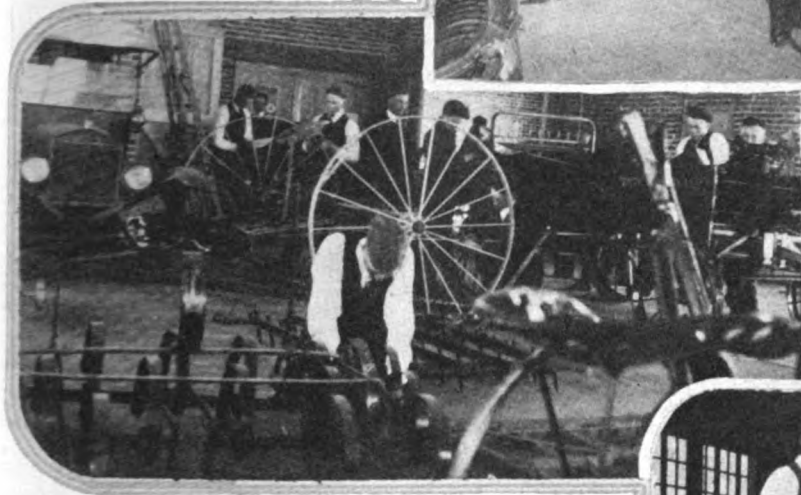


at the Agricultural High School

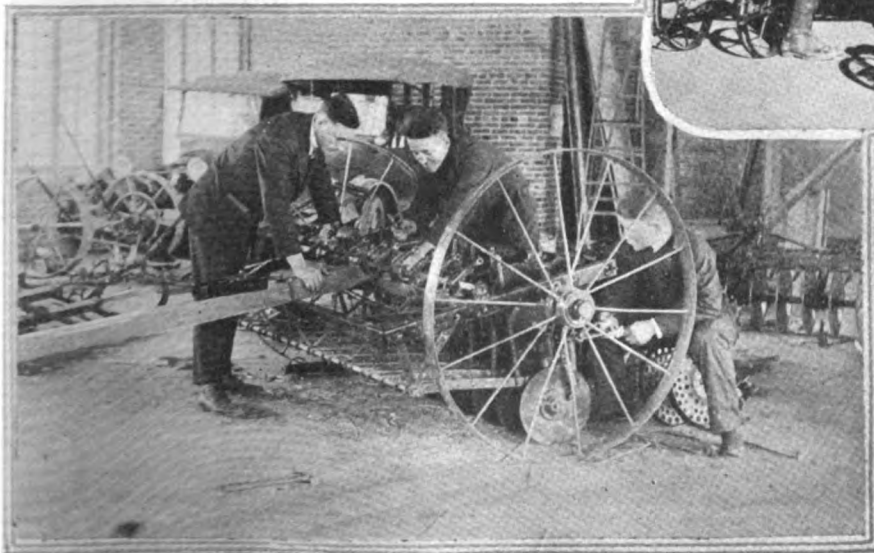
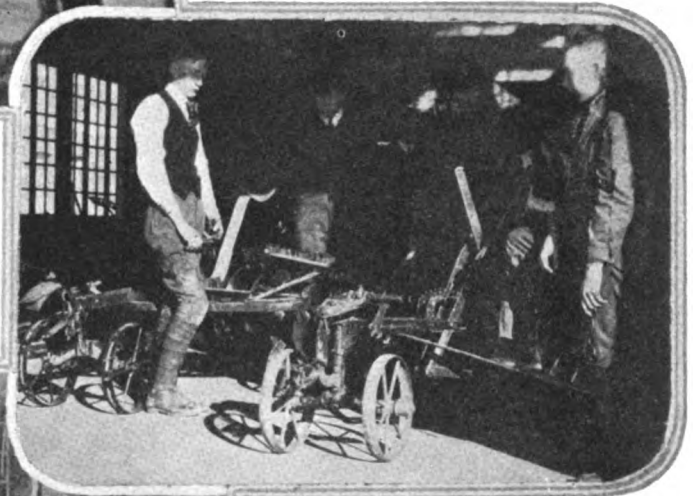
At the right is a scene in the farm implement and machinery department of the South Cache High School, Hyrum, Utah. The boys take apart and set up implements and machines of all kinds, fitting them for this work on their own or their father's farms in the future.



Making adjustments on the farm machines. Learning how the spring harrow and other machines should be set so as to do the best work is another good bit of knowledge the agricultural high school boys get under the direction of teachers that know their business.



At the right is another scene in the South Cache High School Machine Shop.



Getting the grain drill set for seeding time. After the boys have taken a drill down, set it up and made the proper adjustments at school, they will know how to do it before going into the field at home.

An Acre Keeps a Family

Chinese Use Crude Implements, But They Know How to Maintain Soil Fertility and Produce Big Crops

By C. O. LEVINE, of the Canton Christian College

CHINESE have always honored the farmer by placing him next to the scholar in social rank—above that of the merchant, artisan and soldier. For centuries in the past the emperor has paid tribute to the farming industry by laying aside his royal robe once each year and turning a furrow in the gardens of the imperial courtyard at Peking. The empress did likewise each year by inspecting the silk worm cocoons.

Confucius, the great teacher and philosopher says: "Life is like a tree; agriculture is its root; commerce is its trunk; business and manufacturing are the branches and leaves. When the root dies, the leaves wither and fall and the tree is no more."

Six years spent in southern China mingling with the people and studying the methods and practices of the Oriental farmers, have given me a deep sense of appreciation for the industry, thrift, and skill of the Chinese farmers.

American farmers have much which the Chinese farmers lack and need, in the way of improved farm machinery, to help meet the steady increase in cost of labor. In the past many costly attempts have been made to use large power machinery, imported from America, in Chinese fields. There have been a number of importations of large steam plows and tractors, but, to the writer's knowledge, not one is in successful operation today. The cost of operating such machinery, as compared with hand labor, is too high. The time has not yet come in most parts of the Orient for the use of

such large machinery in farming. Since most of the fields are less than five acres in area, it is obvious that the biggest need is for improved small one and two-horse (or cow) machinery.

During the past fourteen years the Canton Christian College, thru the co-operation of manufacturers of farm machinery in America, has carried on a pro-

fields, where the native harrow, with its single row of teeth, is the only type that can be used.

As the Chinese are more and more using cream and milk, cream separators will soon be in demand in the larger dairies. A number of small milk condensing and canning plants have been established with little or no modern



Only the Light Chinese Harrow, with Its Single Row of Spikes Set Far Apart, Can Be Used in the Soft, Wet Soil of the Paddy, or Rice Fields.

gram of education in the use of modern machinery adapted to Chinese conditions. The Chinese one-buffalo plow, while light and cheap, cannot compete with the small modern 7 to 9-inch plow in soddy or sun-baked fields. The modern harrow (one section) should also eventually largely replace the inefficient native harrow, except in the wet paddy or rice

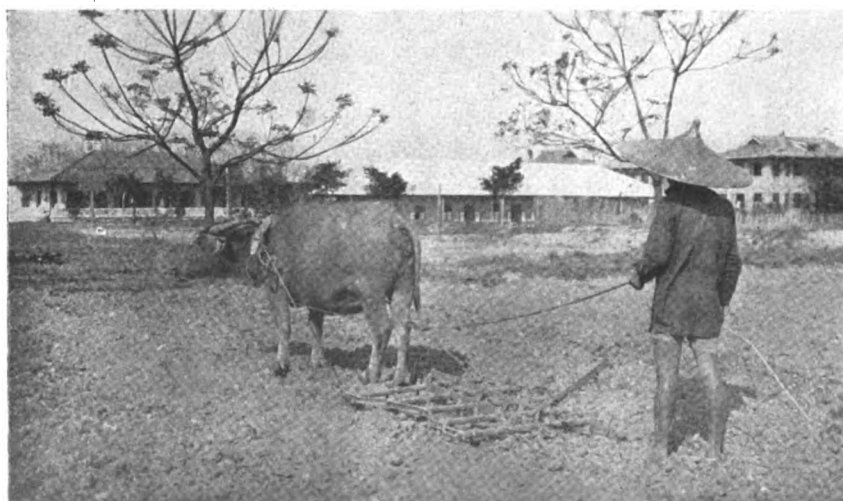
equipment. Canning plants, for canning of fruits and vegetables, have sprung up in many parts of southern China. Many of these plants are well equipped with American machinery.

Cleaning and grading of rice, ginning of cotton and extraction of oils by hand mills are now giving way, in the larger and more progressive villages, to power-driven machinery.

The native foot and hand-power outfits for elevating water are used only for lifts of less than ten feet. The cost of labor is prohibitive for higher lifts, and as a result, during dry seasons, thousands of acres of crops suffer for lack of moisture.

The size of farms in China varies from less than one to more than 20 acres, the average being probably less than five acres. The yields per acre are high. The average yield of rice has been estimated at 40 bushels an acre. Yields as high as 80 bushels per acre for one crop have been recorded. In the southern part of China two crops of rice or several crops of vegetables are raised each year.

Thru centuries of close observation of plant life, the Chinese farmer has acquired an intuitive knowledge of each individual need and characteristic of the



The American Single Section Harrow Does Good Work in Soil Too Hard and Lumpy for the Light Chinese Rake Harrow.

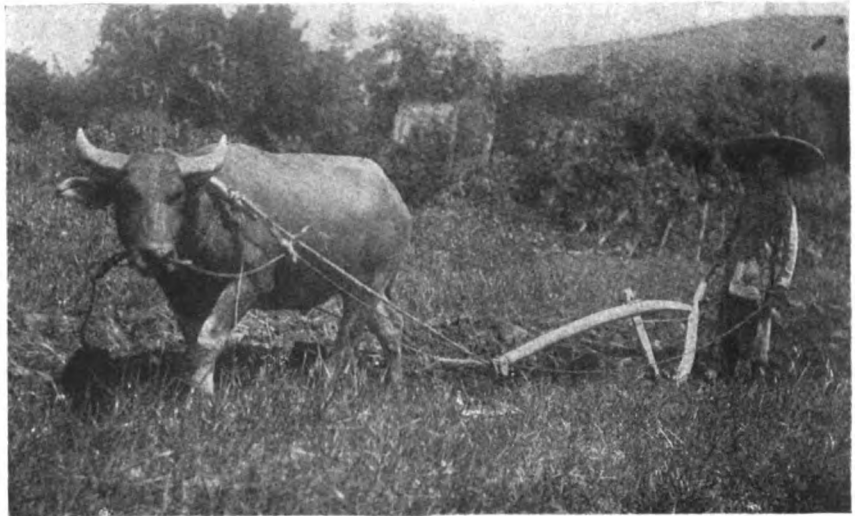
growing plant, and this is the secret of his wonderful success as a gardener. Where the American farmer thinks of large fields, the Chinese farmer is concerned about the individual plant. Early and late, at all periods of the plant's growth, he is deeply concerned about its welfare, and he expends a vast amount of time and energy in the application of the best practices in the economy of plant growth, with which he is acquainted, in order that the needs of each individual plant may be met.

Most plants, whether grain, vegetables or fruit, are started in nursery environment. Even field corn is first planted in a nursery bed, to be transplanted to the field rows when a few inches high. The seed bed is given very careful preparation so that each seed, no matter how large or small, strong or weak, can germinate under none but the most favorable conditions.

After the seed is planted, the soil, which is seldom rich in itself, is usually covered with ashes which have been carefully preserved from burned grass, the chief source of fuel. The ashes furnish food for the growing plant, and help keep away certain insects. The ground is then covered with straw to prevent sun injury to the delicate germinating seeds.

The harvest of one crop is followed immediately by the planting of another. Near cities, where vegetable farming is the chief type of farming, crops in various stages of maturity are seen growing in the same field.

One crop may be just ready to harvest, another may have reached half its growth, and a third may have just been transplanted to the field from the nursery bed. The inter-tillage crops are usually not of the same kind. Sweet corn, cabbage, lettuce and beans in different stages of growth are found in the



The Chinese One-Handled Plow Is Light and Cheap. It is efficient in wet rice fields, but is too delicate to plow in the hard, dry upland or sod soils.

same field, in rows about 18 inches apart.

The importance of rotating ordinary crops with legumes is well known to the Chinese farmer, and practiced almost everywhere in China. The Chinese farmer knows that just as men must be fed, plants must also be fed. He cannot name for you the essential plant foods, such as nitrogen, potassium and phosphorus, but he knows the value of the raw materials which contain these elements, and he also knows exactly in what stage of the plant's development each kind of food is needed.

In processes of fermentation that make plant food available for immediate assimilation by the plant, the Chinese are adepts. Manures are seldom applied fresh, but are first decayed in a compost heap. In the central part of China, where a species of clover is grown, a compost is commonly made of alternate layers of green clover and manure, or pond mud, which is rich in the droppings of fish and ducks with which ani-

mal life all ponds and streams are stocked. In the south a species of legume is often sowed in the rice fields in the fall, after the second crop of rice is harvested, and in the spring, when it has formed a rank growth, it is plowed under as a green manure in preparing the field for the spring crop of rice. Peanut cake is a common fertilizer for rice and sugar cane fields. To make it more available for immediate assimilation by the plant, it is often first dissolved in sewage.

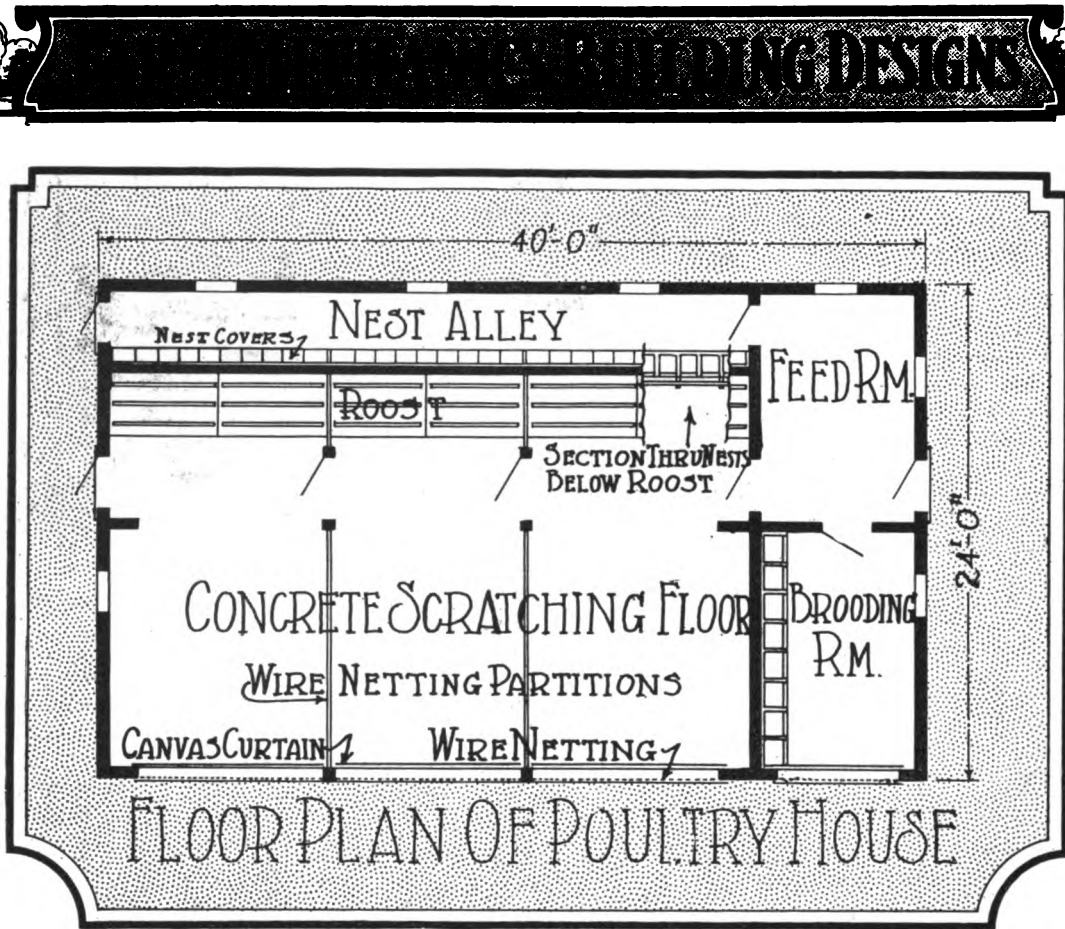
The large spreading banyan trees, found on either side of the village gateway, both inside and outside the brick or clay wall which surrounds the village, afford shade and shelter for the native cows and water buffaloes which are the draft and beef animals of the Chinese farmers. These trees, which are frequently several hundred years old, are held sacred by the village people. While the draft animals are usually sheltered under large trees, or in open sheds built along the inside of the village wall, pigs and chickens occupy a section of the dwelling house or a shelter built within the same enclosure as the home. In the poorer homes, a sow and her family of pigs are commonly found sharing the living room with the farmer and his family. A corner of the living room is simply partitioned off for the animals. The floor of the pens for the pigs is always kept washed clean. All the animal waste is carefully preserved for fertilizing the fields.

As a rule the land that a farmer tills is separated into a number of small fields, generally of less than an acre in area. He may have five or six fields, some probably several miles from his home, to which he walks every day to his work.



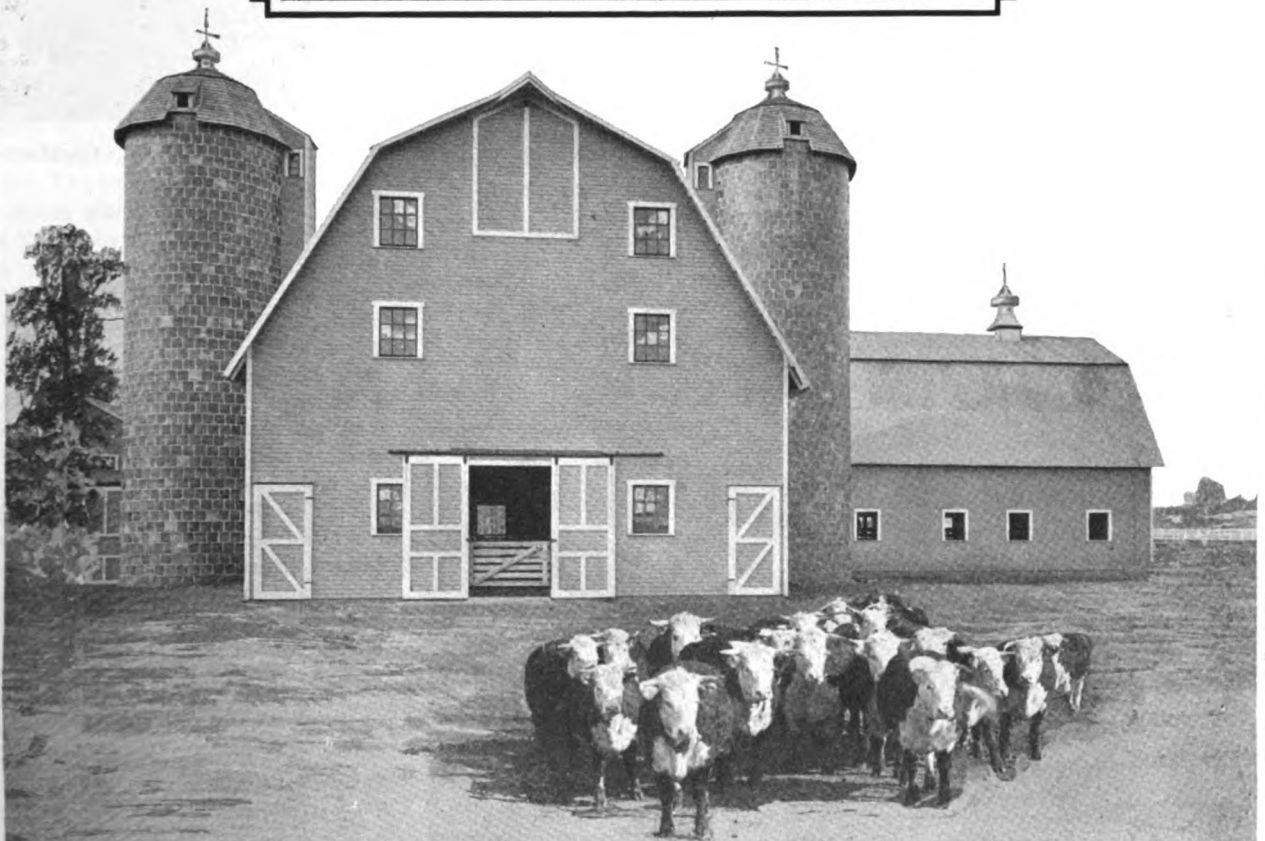
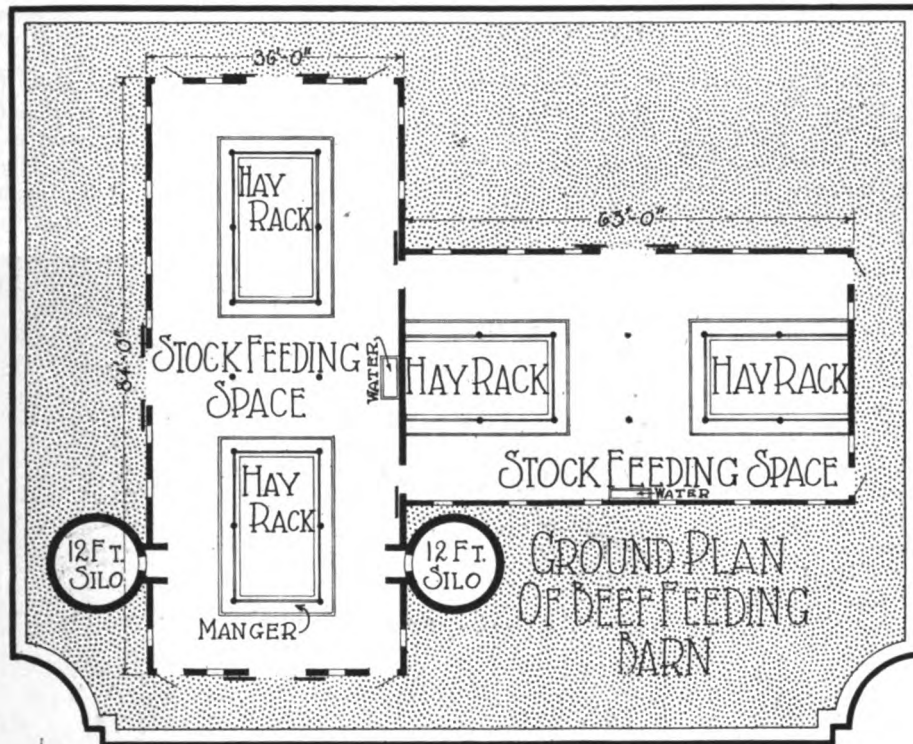
Agricultural Students at Canton Christian College, Canton, China, Learning to Plow with a Small American Plow. The soil bakes very hard a few minutes after a rain and only a modern plow, tho small, can be used.

EDITOR'S NOTE.—This is the first of two installments of Mr. Levine's article. The second installment will appear in an early issue.



SUNNY HOME FOR THE POULTRY. Sunshine, especially in the winter, helps keep the poultry flock healthy and the layers doing their best. That's why the saw-tooth roof poultry house is a favorite among successful poultrymen. The house shown above is 24 by 40 feet and will house a flock of about 200 hens. The windows in the roof admit light to the rear of the house, while the low front is open, admitting plenty of air.

FARM MECHANICS BUILDING DESIGNS



WINTER QUARTERS FOR BEEF CATTLE. In exterior appearance the modern barn for housing beef cattle does not differ much in appearance from the up-to-date dairy barn. However, practically none of the equipment that is found in the dairy barn is included in the beef cattle barn. The barn shown is very attractive in appearance and is well constructed. Two 12-foot silos, one on either side of the main barn furnish a supply of ensilage for feeding when the cattle no longer can graze the pastures. Movable racks keep a supply of roughage before the animals.

Good Roads'll Keep'Em Home

When Autos And Improved Highways Make it Easy to Get to Town.

The City Loses its Lure

By JOHN S. CRANDELL

MANY farmers think they want to live in the city and many city men think they want to live in the country. So the farmer goes to town as often as he can, and the city man goes to live in a suburb that makes him think he is in the country. Neither man would be really happy if he changed about entirely. Many of the things the farmer likes about the city are the very things that the city man goes to the country to get away from. The conveniences that a city man is used to he takes with him to his suburban home.

I live in a city. I have a cousin who lived on a New York State farm, and who married and came to live in the same apartment house with us. She was "crazy about the city," she said, and the first three or four evenings after she had moved into her apartment she and her husband stopped at our door to see what "show" we were going to each night. She was much astonished when my wife said we only went to the theater once in a while. "Why," exclaimed my cousin, "we are going to go EVERY night." And they did—for two weeks. Then they decided to rest awhile, and now, after a year or so in town they go perhaps once a month.

This is just human nature, and it illustrates what all of us want. We want a change. After we have had enough of variety we settle down to a sane and more or less uneventful life. If the farmer can get to town often enough he is perfectly satisfied with his farm. This is true alike of all the family. The sons and the daughters really don't want

to go away from home. What they want is the means for enjoyment that the town offers plus the solid comfort of the farm home.

How can these two unlike aims be obtained? The answer is simplicity itself:

good roads make folks stay home because it is possible for them to get away when they want to.

In 1919, the Highway Commissioner of one of the Southern states asked me to go on a lecturing tour of the states



A Tar Surfaced Road Near Elgin, Ill., Showing a Smooth, Comfortable Highway.

Good Roads

When good roads appear then the boys and girls stay home because they can get away. That is always the way things work. What we can't have we want most, and when we can have what we want any time we want it, then we do not care much about it. So that

with him. He wanted to talk about good roads. "But," said he, "you don't have to tell these people the benefits good roads will bring them. They know that. What they want to know, is what kind of roads to build, and how they can raise the money. Ten years ago we had to sell everybody the Good Roads Idea. That has been done, but what they want now is straightforward talks on road building."

This is the situation today in practically all parts of the country. Every farmer knows that good roads are necessary to his existence, but in many districts he has seen his hard earned money wasted so foolishly that he is wary about voting money for further road improvements.

In spite of all the talk to the contrary, the facts of the matter are that thruout the lifetime of our generation, at least, a great majority of the common roads of this country must remain earth roads, with gravel as the next higher type. Farmers are familiar with earth roads, and many know how to properly drag a dirt road to keep it in condition. In FARM MECHANICS, there are devices advertised for use with tractors that will



A Section of a Newly Surfaced New York State Highway. Two coats of tar well applied over the gravel.

keep a dirt road in good shape thruout most of the year, and where dirt roads are the best that may be had, road machines and drags should be used at every opportunity.

But while nearly everyone knows about the maintenance of earth roads, there are comparatively few know anything about the possibilities of gravel and macadam roads. There are as many kinds of gravel as there are makes of automobiles. Some gravels are good for road building, and some are not so good. Some contain too much clay; others do not contain enough to properly bind the pebbles together, for clay in gravel acts as a cement to hold the particles in a solid mass. A gravel containing about 10 to 20 per cent is usually good.

The first step in road construction is to see to it that there is thoro drainage. The water must be led away from the road, so that the soil will be dry underneath the surfacing material. If gravel is to be used, it must be of as good a quality as may be obtained for the money at hand. If the road is an old gravel road, it should be shaped up so as to take out all ruts and waves. If there is too much clay present some washed gravel may be spread over the top and harrowed in. Then, when the surface is in good condition it is lightly swept, removing all caked dirt and manure, and it may be given a treatment with light refined tar.

The tar is sprayed over the surface, usually by a pressure sprayer, and this kind of work is called a surface treatment. The amount of tar used depends on the condition of the road, but it is customary to apply from one-half to three-quarters of a gallon to each square yard. The tar is allowed to soak into the road, and after a day or two a smooth, dustless, wear-resisting highway results. The surface treatments must be given every year, but the amount of tar applied decreases with each treatment.

If the gravel road is a suitable one for treatment, it may be treated and kept in first-class condition for less than \$1,000 a year per mile. This figure includes keeping the ditches cleaned, the drains open, the weeds out, and the surface treated with refined tar.

Such a road is one over which you can go to town, rain or shine. You can haul your produce to the railroad or the market in record time.

The same sort of surface treatment may be given a macadam, or broken stone road, with even better results than are obtained with gravel. Macadam, if it is well built, is capable of carrying much heavier traffic than gravel. So if a new road is to be built, and the material for it comes from a considerable distance, it may be cheaper to build macadam than to buy and ship gravel. as, equal distances, the freight rates on



This Road Was Built Eight Years Ago and Shows No Signs of Wear.

gravel and stone are the same, and there is no great saving in the cost of the gravel over that of broken stone, if the gravel must be bought. There are macadam roads in all parts of the country today that are carrying remarkably heavy traffic. Of course all these roads have been surface-treated with refined tar, and are maintained with tar whenever necessary.

When it comes to town and city streets, then there is the question of heavy truck traffic to be considered. If there is much of this kind of traffic it will be found that the plain macadam is not strong enough to stand the wear and tear, and it will be necessary to use a strong binder of refined tar to hold the pieces of broken stone in place and keep them from moving on each other. Such a road is called a tar macadam.

No road, of whatever type, is worth anything unless it is kept up. And that means that holes and ruts must be repaired as soon as they make their appearance. No one should be misled by

the statements that appear from time to time, saying that a good road needs no maintenance. Such statements are false. All roads need maintenance, some less than others.

Gravel, macadam and tar macadam are easy to build, easy to maintain, and are inexpensive. There is no reason why our country should not be the best paved in the world. The value of a farm rises immediately a good road passes it. I do not believe that a tenth the trouble with farm hands that has occurred in the past would have been experienced if good roads had linked up the farm with the town so that the hands could easily get to town and back again.

Your farm isn't on the map if you aren't on a good road. And remember that it need not be an expensive road to be a good one. Your farm is your home. Make it so attractive that no one wants to leave it except for a ride to town and back, and make that ride pleasant, safe, dustless and mudless with a road worthy the farm.



Tank Truck Applying Tar on a Michigan Road.

Estimating the Nation's Crops

Before the Wheat Has Headed Out, and While the Farmers Are Still Cultivating Corn, Our Government Can Calculate Approximately What the Harvest Will Be

By ROBERT H. MOULTON

ON May 8 of this year the U. S. Department of Agriculture issued a report showing the condition of winter wheat on May 1 in the United States to be 83.5 per cent of a perfect condition, and comparing with an average of 87.1 per cent for the last ten years. One the acreage sown, about 38,000,000 acres, this indicated a winter wheat crop of approximately 585,000,000 bushels, which added to a probable spring wheat crop of some 250,000,000 bushels, predicted a total wheat crop of approximately 835,000,000 bushels for the year 1922, which came pretty near what the harvest was.

Just think of estimating, before the plants are fully grown, the amount of wheat and other grains which will be grown in this country in a single season! To the layman this sounds like a fairy story, and if he should travel by train from the Alleghany Mountains to the Rockies and note the countless thousands of waving grain fields thru which he passes, he is more than ever of the opinion that the feat is impossible. Yet this task has not only been made possible but even comparatively easy thru the methods and system of the Bureau of Crop Estimates of the Department of Agriculture, whose statisticians may be said to have their fingers on the pulse of the grain fields of the entire country. There are few outside of the grain trade,

however, who have any knowledge of the bureau or its working.

Beginning with the sowing of winter wheat in the fall, the Bureau of Crops Estimates issues a monthly report covering the acreage sown, the condition of the grain, and the prospective yield. If

press representatives. The word "wander" is used figuratively, because you could not gain access to the room without proper credentials, and once there you would be unable to leave until the business at hand was finished; all doors leading to the room are locked, and

TOTAL PRODUCTION		(000) OMITTED	CONDITION		YIELD **ACRE		ACREAGE
OCT. 1, 1920 INDICATIONS	DECEMBER ESTIMATE 1919		OCT. 1, 1920	YEAR AVE	1920 INDICATED BU.	1919 DEC. EST. BU.	
532,641	731,636	WINTER WHEAT	—	—	15.6	14.7	34,165
218,007	209,351	SPRING WHEAT	—	—	11.2	9.0	19,487
750,648	940,987	ALL WHEAT	—	—	14.0	12.8	53,652
3,216,192	2,917,450	CORN	89.1	74.8	31.0	28.6	103,648
1,444,362	1,248,310	OATS	—	—	35.2	29.4	41,032
191,386	165,719	BARLEY	—	—	25.7	22.3	7,437
77,893	88,478	RYE	—	—	14.2	12.5	5,470
11,704	8,919	FLAX	62.8	69.8	6.9	5.3	1,706
199,503	126,058	KAFIRS	94.7	—	26.1	25.8	5,342

DUE FRIDAY, OCT. 6, 2:15 P.M.

Crop Estimates Are Prominently Displayed at Grain Exchanges, as They Have a Strong Influence on Prices

you should wander into a certain room of the Bureau of Crop Estimates at Washington on the day when one of these reports is to be given out, you would find gathered around a table many newspaper correspondents and

there is no way of communicating with anyone outside.

On the table are a number of sheets of paper—copies of the crop estimate—face down. An official of the bureau stands nearby with an accurately timed watch in his hand. Directly he says "ready" and the press representatives range themselves around the table, each with a hand on one of the sheets of paper. Next comes the command, "get set" and the reporters assume attitudes corresponding to those of a group of sprinters who are about to start on a hundred yard dash. Finally there comes in stentorian tones the anxiously awaited word "Go!" Immediately there is a sound of feet racing over the tile flooring, followed in a few seconds by the rapid fire of telegraph instruments and by the excited shouting into telephone transmitters of a series of numbers. The crop estimate is going to the four quarters of the country.

But why all this mystery? Simply this: It is a part of the Government's determination to play absolutely fair, to see that no biased information is put out before the fixed time, and to see that the report is released to all interested parties simultaneously. Of course, the reporter with the longest or the



Ready, Get Set, Go! Newspaper Representatives at Washington Awaiting the Word to Start the Monthly Figures of the Bureau of Crop Estimates to the Newspapers.

fastest moving legs may obtain a few second's advantage over his competitors, after the signal to go is given, but that is all.

No matter on what day the Government crop reports are issued, the time is always exactly the same—2:15 o'clock Eastern time, to the second. The reason for this is that it is the hour of closing of the principal grain exchanges in the west—1:15 p. m. If the reports reach the exchanges during the midst of a session, they might create unwarranted fluctuations in prices. Naturally the reports do affect prices more or less, depending upon the nature of the information they carry, but coming after the close of a session, there is ample time in which to digest their contents before the opening of another session the next day.

The little race among the Washington correspondents across the corridor of the Agricultural Building at Washington is only the beginning of the flash which carries the report to every person in the United States who is sufficiently interested to read it. And there are untold thousands who read it, and, if necessary, revise their judgment by it. The Kansas farmer gives it close attention, for it may indicate whether the wheat, corn or oats crops of the country will be large or small, and, consequently, whether he will be able to market his own crops at a high or a low price; the flour manufacturer is keenly interested, for it gives him an idea of the price he may expect to pay for wheat; and the trader on the grain exchanges is particularly concerned, for these reports, as a rule, exert a considerable influence in making of the prices of grain for future delivery.



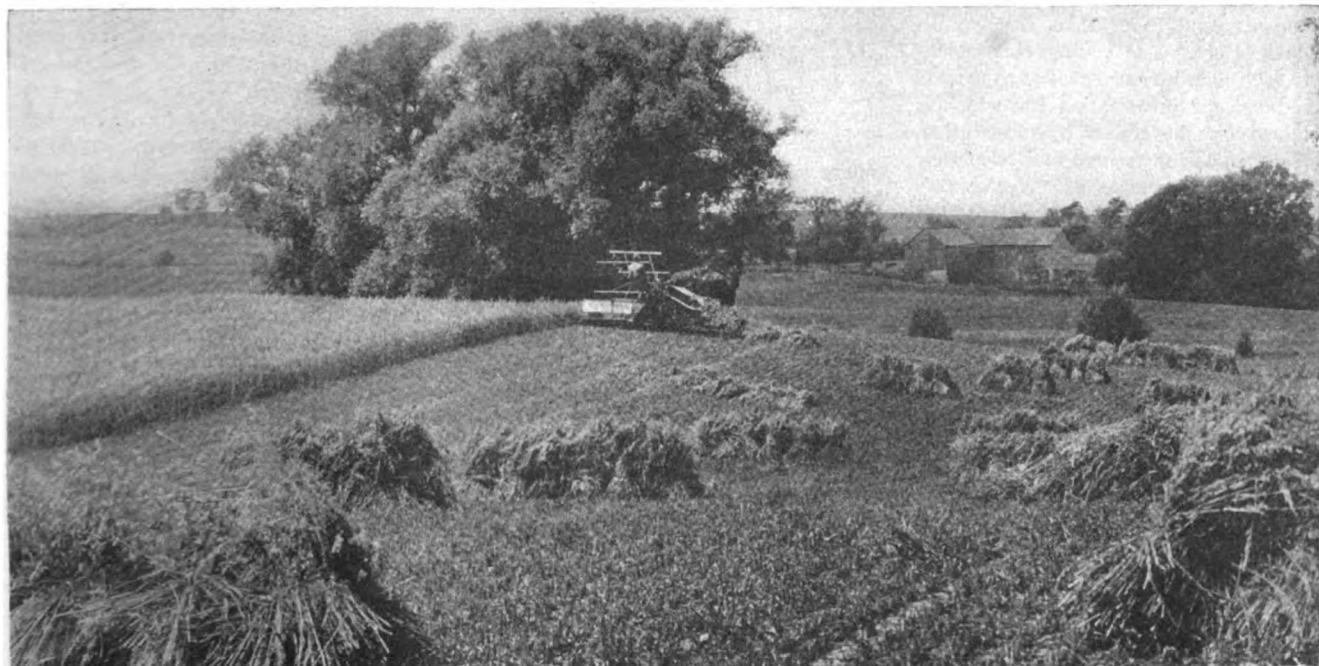
Field Reporters Examining Corn in the Field as a Basis for Estimates.

A national crop report as issued by the Bureau of Crop Estimate is, to a considerable extent, a composite of thousands and thousands of individual estimates of the local situation. It may be stated, too, that the development of the work of the Bureau of Crop Estimates has been such in the last few years as to win and hold the respect of the grain trade of the entire country, the members of which were at first somewhat skeptical and rather hard to convince. That the reports are absolutely unbiased no well-informed person can doubt. The very nature of the methods of gathering information, its tabulation and dissemination, and the restrictions and safeguards with which it is hedged about make anything else practically impossible. As for the force of statisticians, no

incentive for bias exists among them, even if a prejudiced report were possible, since the tabulators and computers who make up the totals do not even know the States to which the reports pertain, and the final telegraphic reports and comments of field agents relating to speculative crops are kept locked in the office of the Secretary of Agriculture until crop reporting day, when they are turned over to the crop reporting board. This entire board is immediately locked in, with guards stationed at the doors and telephones disconnected, until the minute the report is issued.

In the central office of the Bureau of Crop Estimates at Washington are housed about 135 employes, the majority of whom are statistical clerks, computers, and trained statisticians experienced in handling and interpreting agricultural facts. In addition there are 42 salaried state field agents each of whom is required to travel over his state systematically during the crop season, and personally to inspect crops, interview farmers, representatives of commercial houses, mills, elevators, buying and selling agencies, and state and local authorities.

These field agents are in the classified civil service and are appointed only after passing a rigid civil service examination to test their educational and statistical qualifications. Before being permitted to take the civil service examination they must have had at least five years' experience in farming, and education equivalent to a four-year course in an agricultural college, or at least three years' responsible practical experience in work involving statistical methods or statistical inquiry. That they are all men of high character, qualified by train-



Even as the Grain Is Harvested and Before Threshing the Crops Are Watched and a Close Estimate Made of the Yield.



Reporters Visit the Threshers and Watch the Amount of Grain per Acre That Comes from the Separators. These combined reports furnish a good basis for estimating the crop of the country.

ing and experience for their work, competent judges of crop production, and familiar with local conditions in their states, goes without saying.

Each agent enlists the voluntary services of from 250 to 1,500 selected crop correspondents in his state, who report to him every month regarding crops. At the close of the month the agent makes up a detailed estimate with full explanations, showing the causes which have made it necessary to change the estimate of the previous month, and forwards it to the Washington office.

Two other classes of voluntary reporters send reports directly to the Bureau at Washington; 28,000 volunteer county correspondents, 33,000 correspondents, 20,000 field aids who report to the state agents, 6,400 special price correspondents, and more than 12,000 mills and elevators. The county correspondents each month return replies to printed schedules, the information for which is obtained for the county by observation, inquiry, and upon written and telephonic reports. The services of the township reporters is of a similar character but covers the more restricted area. The work of securing and maintaining the list of volunteer crop reporters falls to the Division of Crop Reports of the Bureau.

Approximately 200,000 volunteer correspondents in all make up the Bureau's list, including 50,000 individual farmers. This does not include special lists constantly undergoing revision, in order to keep it alive. Correspondents who do not correspond are replaced as quickly as possible by others who take a real interest in the work.

In addition to the special reports sent in each month by the field force, the crop reporting board has all other available

data, such as the Weather Bureau reports, crop reports issued by state authorities and private crop estimating agencies. It is quite certain, therefore, that this board has before it more complete, detailed and accurate data upon which to base its reports than any other crop estimating agency in the world.

The crop reporting board is composed of the chief of the bureau, assistant chief, chief of the Division of Crop Reports, two statistical scientists, and one or more of the field agents called in from the different states each month. When the returns from the voluntary crop reporters are all in, they are sorted by states and districts and partial totals are tabulated on sheets which are identified by numbers only, there being nothing on the sheets to indicate either the state or the crop, so that the work of adding up and averaging the partial totals is purely mechanical. The tabulation sheets are cut up into sections which are distributed to different groups of computers, and the results are not assembled by states and crops until after the Bureau is put under lock and key on crop-reporting day. The report of the state field agents go directly to the Secretary of Agriculture and are locked, unopened, in a vault in his office. They remain unopened, until the morning of crop-reporting day when they are turned over to the chief of the Bureau, at the time the Crop Reporting Board is called into session.

From this moment until the report is issued it is impossible for anyone but the Secretary or Acting Secretary to enter the room where the board is in session and even they cannot leave the room, once they enter, until the report is given to the press. Guards are stationed

outside of the locked doors leading into the Bureau, and all telephone and telegraph wires are disconnected, the switchboards being locked and the key retained by the chairman of the board, who is also locked in while the board is in session.

All the data available with respect to each crop under consideration are assembled, totals and averages by states and crops are passed upon by the Crop Reporting Board, and a summary of the report is set up on a duplicating machine from which copies are made for issuance to press association at the hour and minute fixed by the Secretary.

While the personal equation must inevitably enter into crop estimating, and while personal opinion is, in fact, the basis for all reports on conditions of growing crops and largely on the yield, nevertheless the system of work developed by the Crop Reporting Board reduces to a minimum the liability of serious error. If there were no official reports market speculators would obtain more or less information and exaggerate it for their own ends. As a matter of fact, many intelligent agencies do gather information in advance of the department's announcements, and sometimes they come fairly close to the department's reports. The effect is to prevent very wide fluctuations as a rule.

The Bureau of Crop Estimates is considered by those who know to be the best organized, smoothest running piece of human machinery for securing and disseminating agricultural statistical data in existence. So well recognized is this fact that a number of foreign countries have sent representatives here to study our system and to adopt that portion which is applicable to their conditions.

How to Build a Radio Set

Outfit That Will Receive Message From as Far as 1,000 Miles Can Be Constructed at Small Cost by Following the Directions Given in This, and Succeeding Articles by Mr. Carr

By A. H. CARR

[Editors Note—This is the first of a series of articles that describe in detail how to build a long distance Radio receiving set. Mr. Carr, the author, is an amateur wireless "fan," and constructed the set he here describes for his own use. It has proved very satisfactory, he having heard distinctly concerts given more than 1,000 miles away. This first article gives directions, by text and drawings, of the first moves in constructing the aerial and receiving set. Go ahead and build what is here described, and then watch for the next article which explains the next steps, or save the magazines carefully until the series is finished, which probably will be in three months.]

WIRELESS messages are carried on waves in the ether. Ether is all around us, everywhere. Even in a solid stone there is ether, but we cannot see it any more than we can see the air we breathe. When a radio sending station is working it is constantly making waves in the ether around its aerial (as the wires stretched above it are called).

We all know that when a pebble is dropped into a pond of water little waves go out in a circle in every direction, travelling farther and farther until

they splash against the banks. Of course there is only one set of waves when a stone is dropped, but suppose we place a cork on the water and start bobbing it up and down. There will be a separate set of waves for each time the cork is bobbed.

Now if another cork is placed at some distance it will bob up and down exactly the same number of times as the first cork and if a person wanted to he could arrange a set of signals and send messages in this way.

In exactly the same way a wireless telephone or wireless telegraph sending station makes waves in the ether, starting them around its aerial, and in exactly the same way the receiving station picks up these waves with its aerial.

The aerial is very simple, but we can readily see that it is very important. Probably most people will consider constructing an aerial the most difficult task they have to do in building their own wireless station. And it certainly makes the explanation of receiving more simple to start at the real beginning of the actual receiving, so it might be wisest to start with the aerial first and explain its construction thoroly.

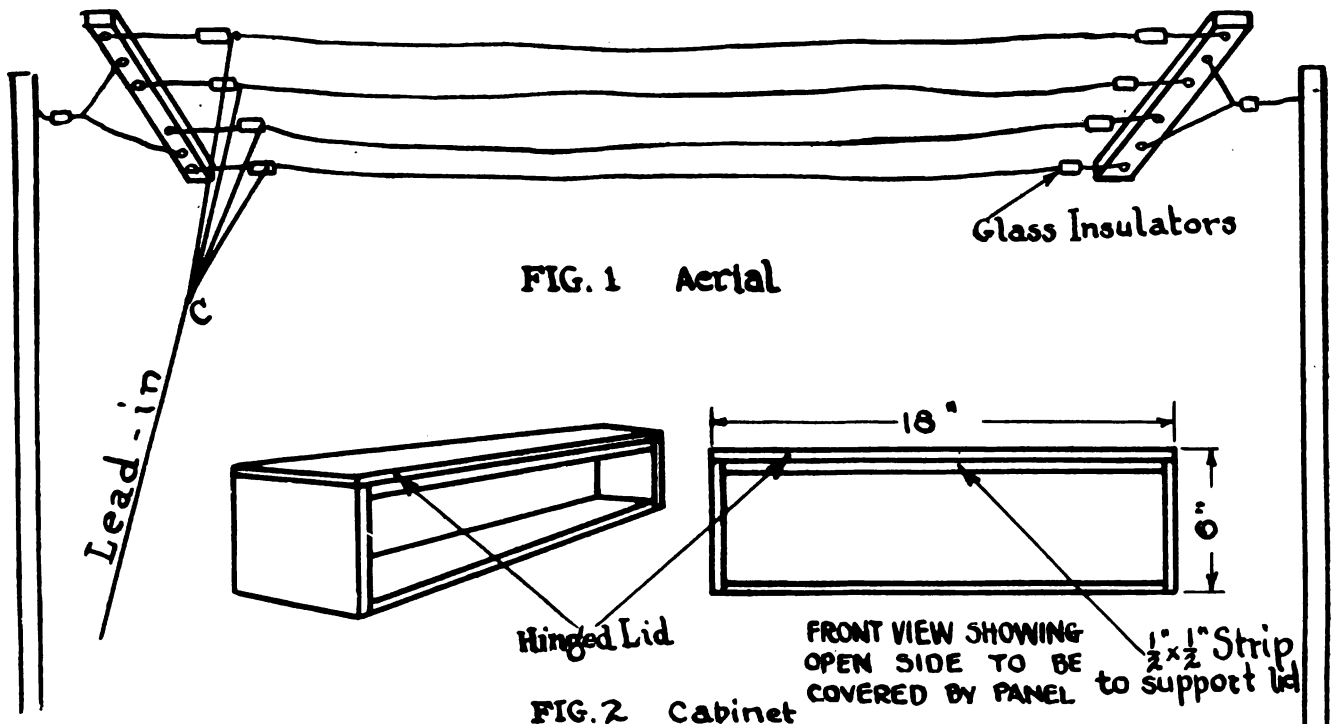
Most any kind of metal will do for an aerial, if it is long enough, providing it

is well insulated from the ground. But while constructing an aerial you might as well make a real good one because it will not cost much more and the whole thing costs very little.

An ideal aerial is shown in Fig. 1 and can be made as long as desired (the longer the better, up to 150 feet). It can be placed as high as desired (the higher the better, but it is really only necessary to have it well above most of the surrounding metal contrivances, such as wire fences, metal water tanks, etc.).

In constructing the aerial you may use any size pieces of wood which you may have for the crossarms, such as strips one inch thick, and two or three inches wide. The strips should be long enough to hold as many wires as you want to buy and hold them about 2½ feet apart. Each wire must be connected to a small glass insulator at each end and the glass insulator secured to the crossarm by a short piece of wire as shown. These glass insulators completely insulate the aerial wires from the ground. Another insulator can be used between each crossarm, supporting wire and the wire or rope going to the mast or other support. However, these two insulators are not absolutely necessary.

The size of the wire used should be at



Figs. 1 and 2. Drawing Showing How the Aerial Is Erected and How to Construct the Cabinet of the Radio Set.

least number 14 solid copper, without insulation.

Now as to the number of wires necessary. This all depends upon your pocket-book. One long strand of wire with an insulator at each end makes a fine aerial. However, if you haven't room to stretch such a wire, you can make your aerial shorter and have more wires. Four wires are better than one wire of the same length, but not four times as good as one wire the same length so you can see that it is better to have one wire one hundred feet long than four

to one side of the tuner.

If there is more than one wire in the aerial a wire must be run from the "lead-in" to each of them as shown at C in Fig. 1.

The Ground

To make the connections complete a wire the same size as the "lead-in" must be run from the other side of the tuner to the ground.

There are several ways to connect this wire to the ground. Probably if the ground were wet all around you would

ing. The construction of a handy switch for making and breaking this connection will be described later. When connected properly to the ground during a thunder-storm an aerial is a better protection to the surrounding property than lightning rods.

According to the writer's opinion when the aerial and ground have been constructed the hardest task of all has been finished.

Next we will take up the making of the tuner. After all, the tuner is only a device for adding more wire onto your

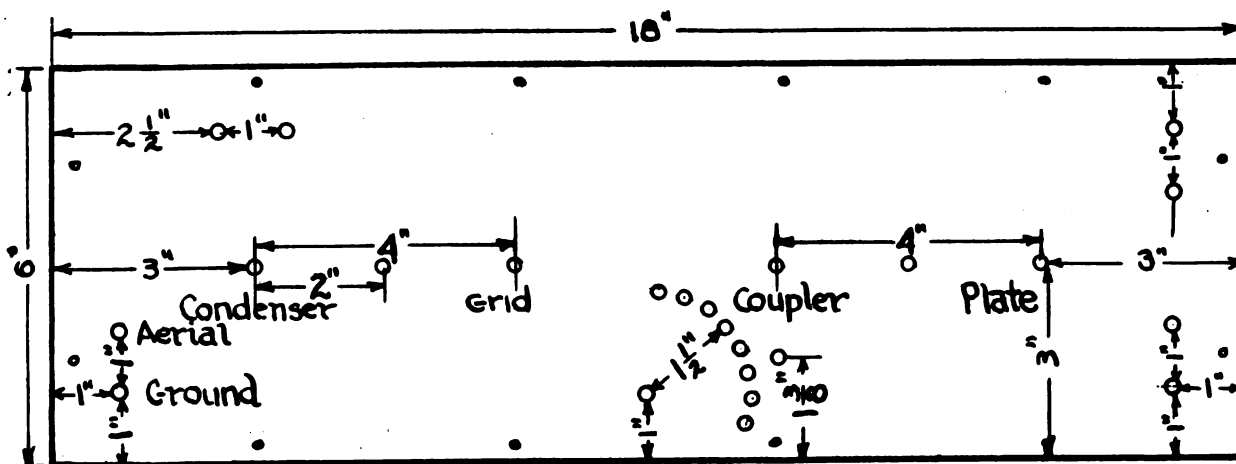


Fig. 3. Drawing Showing How and Where the Various Parts of the Apparatus Are Installed in the Cabinet.

wires twenty-five feet. Anyone who wants to save money will find that one wire from one hundred to one hundred fifty feet long will give excellent results but if you don't mind the few cents difference it will be well worth your money to have more wires.

It makes no difference in what position you place the aerial, whether level, straight up and down or slanting with one end higher than the other, in fact most any kind of an aerial will work if it is separated by glass insulators from all objects which touch the ground.

As to where to stretch the aerial, any place will do. It can be strung between two poles, or it can have one end fastened to the top of another building and the other to the building in which the instrument is to be placed.

The "Lead in"

A wire must be connected to the end of the aerial nearest the building in which the instrument is to be placed. This wire is called the "lead-in" and must be of at least number 14 bare copper wire and it must be held away from all wood and other objects by glass or porcelain insulators. The best way to insulate this "lead-in" is by boring a small hole thru the wall or window frame and slipping a small porcelain tube clear thru. The "lead-in" can be run thru this tube and fastened directly

get results by just sticking the end of it down into the ground. However, it costs nothing to make a good ground connection. If there is a water pipe handy, all that is necessary is to file the pipe clean in one spot, wrap the wire around it tightly and solder securely. The piping goes into the ground and makes a good connection.

A ground connection can also be made by driving an iron rod, or hollow pipe several feet into the ground and soldering the ground wire to that.

Better still, dig a hole as deep as you care to dig and throw several pieces of copper or brass into it, such as the copper bottom of an old worn out wash boiler or similar pieces. Copper wires should first be soldered to each of these and then connected to a cable of copper wires leading up out of the ground. An excellent ground cable can be twisted together from six or eight strands of the same size wire as that used for the aerial. All connections should be scraped clean and soldered securely.

After all the connections are made with the ground plates the dirt may be thrown in again and packed down tightly. The wetter the ground is kept around this spot the better the ground connection will be.

While not in use the "lead-in" from the aerial should be connected directly with the ground wire outside the build-

aerial or taking some off. It is possible to receive wireless messages without a tuner, but without a tuner you would have to climb up to your aerial and take off or put on wire each time you wanted to listen to a different sending station. Because, to hear a certain station, your aerial must be, in effect, exactly the same length as the aerial sending. With a tuner this is accomplished by merely turning a knob.

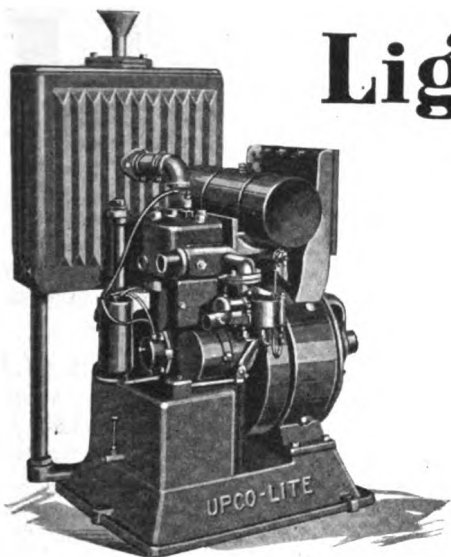
The Cabinet

With a little care a beautiful cabinet can be made and stained oak or mahogany to match the nicest of furniture. There is nothing much to say about the actual construction of the cabinet as each individual will have his own idea. The wood used does not matter (pieces from an old apple box take a nice finish after being sand-papered off smooth).

When completed, the cabinet should be exactly 18 inches long over all and 6 inches high, measuring from the top edge of the lid to the bottom edge of the sides. These dimensions are necessary so the panel, which covers the open side shown in Fig. 2, will fit even with the outer edges of the cabinet. The cabinet's width should be about 3/16 inch less than 6 inches, so that when the panel is placed over the open side the width of the cabinet (panel and all) will be 6 inches. A hinged lid should be provided

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1922 LINE

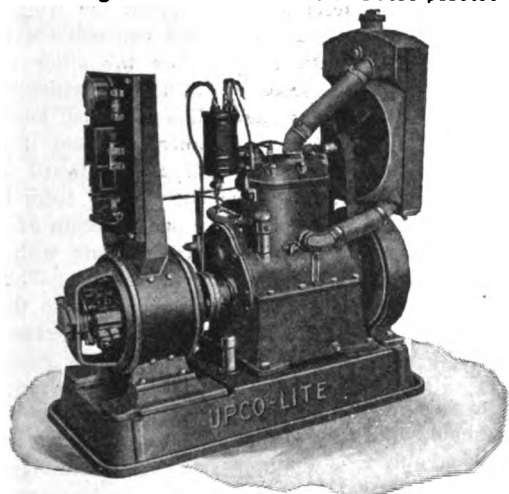
8 SIZES

1—2½—3½—5—7½
10—15—25 K. W.

A Plant for Every Use

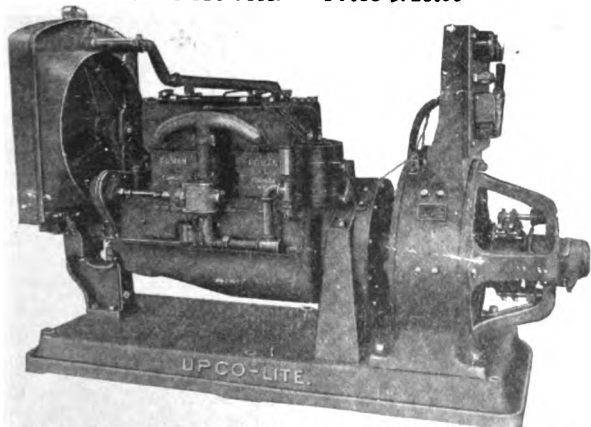
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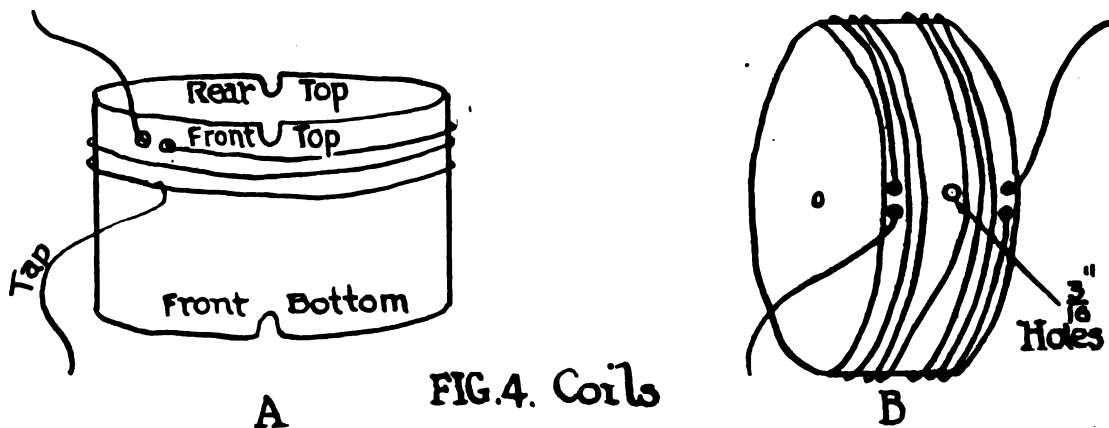


Fig. 4. Showing How to Make and Wind the Coils of the Radio Set.

as you will want to show the working parts of your set to your friends. The bottom of the cabinet should be made of a board not over $\frac{3}{16}$ inch thick for a reason which will be understood later. Across the open side run a $\frac{1}{2}$ by $\frac{1}{4}$ inch strip so the lid, when closed, will rest against it.

The Panel

This should be 18 inches long, 6 inches wide and of a thickness anywhere between $\frac{1}{8}$ and $\frac{1}{4}$ of an inch.

For the best results it should be made of some manufactured insulating material such as bakelite, but real dry wood will do. When wood is used it should be covered with two or three coats of shellac after all the holes have been drilled.

There is nothing to be done to the panel except drilling the holes. All holes should be $\frac{3}{16}$ inch in diameter except the 12 small holes along the edges. These are drilled just large enough to take the $\frac{3}{32}$ inch shaft of the wood screws which hold the panel in place.

In marking off the panel for the $\frac{3}{16}$ inch holes for the switch points first draw part of a circle with a drawing compass and drill the holes so that they will be $\frac{3}{8}$ inch apart from center to center and so they will all be $1\frac{1}{2}$ inches from the center of the switch.

The Base

A base 16 inches by 5 inches by $\frac{1}{4}$ inch can be cut from any kind of wood and fastened along one edge to the bottom part of the panel by means of small brass screws inserted thru the four small holes along the bottom of the panel. This piece forms a shelf on which some of the parts are fastened.

The Coils

For long distance receiving there are six coils used. Now for holding these coils of wire in place there are many styles of holders or forms used and they are all good, but for the benefit of those who want to save money we will resort to the old reliable form—the cardboard cylinder.

To make these forms you will need two hollow cardboard tubes about 6 inches long. One of these tubes must be 4 inches in outside diameter and the other 3 inches in outside diameter. You can make these yourself if you care to go to the trouble, or you can buy them ready made in any length desired for a few cents.

For the benefit of those who must save every cent possible in order to be able to afford a wireless set it can be said that the two tubes may be made in the following way.

Procure two glass preserve jars, bottles or round boxes over 6 inches in length and of different sizes. The small one should be $2\frac{3}{4}$ inches or less in diameter while the larger should be $3\frac{3}{4}$ inches or less in diameter. If slightly smaller than the diameters the jars must be made exactly the diameter given by winding on a few turns of strong paper and gluing it in place. The tubes can be made by winding stiff, brown, wrapping paper or other good paper around the jars until a thickness of exactly $\frac{1}{8}$ inch is reached. This paper should be pasted on as it is wound, leaving only the outside and inside surfaces free from glue. Care must be taken not to get glue between the form and the first layer of the tubes as the tubes, when dry, must slip freely from the forms.

When dry the tubes may be cut into the desired lengths by first marking straight pencil lines around the tubes and running the corner of a sharp safety razor blade along them again and again until it cuts clear thru. The large tube must be cut into three parts, the first of which is $2\frac{1}{4}$ inches wide and the other two pieces are $1\frac{1}{8}$ inches wide. From the small tube is cut three pieces, each $1\frac{1}{8}$ inches wide.

Into the large $2\frac{1}{4}$ inch ring there must be three slots cut directly opposite each other as shown in Fig. 4-A. These slots should be exactly $\frac{1}{2}$ inch deep and $\frac{3}{16}$ inch wide. Into each of the other rings there must be two $\frac{3}{16}$ inch holes drilled directly opposite each other and equal

distance from the edges as shown in Fig 4-B.

To Keep Hens at Home

A SIMPLE and practically bloodless operation on chickens' wings keeps them from flying over fences and bothering gardens, say the poultrymen at the New York State Agricultural College. They give the following directions for the operation:

"Remove a few feathers around the second joint. Spread the wing out to its full width and you will see just beneath the skin on the outer edge of the second joint a small white ligament or cartilage. Insert a small knife blade under the ligament and cut it in two, pulling upward and outward on the knife. Then cut a piece from the end of the cartilage one-sixteenth of an inch long. This may be done with a pair of scissors or with a knife. The object in removing this section is so the cartilage will never grow together again. Since no major arteries are encountered you will find this a very simple and practically bloodless operation."

MOST grasses seed themselves in the fall. That's one reason for renewing the lawn by raking out the weeds and applying a little good seed before the autumn rains.

OCTOBER 31 is Hallowe'en, the time when all the boys and girls celebrate. There is much wholesome fun in the amusements that are traditional with this event, such as bobbing for apples, pulling candy and having luncheon of doughnuts and cider.

FRUIT trees, shade trees about the house and seedlings for the woodlot are better planted in the fall than in the spring. Have a good ball of dirt around the roots, make the hole each is to go in plenty large so that the roots will not be cramped and firm the earth around the roots well. Careful planting insures greater percentage of healthy trees.

Be Sure of Your Lubricating Oil

Chart of Recommendations

Trade Name	Motor Oil	Trade Name	Motor Oil
Akron.....	H.	Magnet B.....	H.
Allis-Chalmers—All Models.....	H.	Mark VI Once Over.....	H.
Allied.....	H.	Midwest.....	E. H.
All Work—Both Models.....	H.	Minneapolis, 12-25 and 17-30.....	H.
Andrew-Kinkade.....	E. H.	Minneapolis, 22-44 and 35-70.....	E. H.
Appleton.....	H.	Mogul.....	H.
Armington.....	H.	Mohawk.....	H.
Aultman-Taylor, 22-45.....	E. H.	Monarch-Industrial.....	H.
Aultman-Taylor, 30-60.....	E. H.	Nelson Junior & Senior.....	H.
Aultman-Taylor, 15-30.....	E. H.	Ohio.....	H.
Automotive.....	H.	Oil Gas, 20-42.....	E. H.
Avery Model C.....	H.	Oil Gas, 25-50.....	E. H.
Avery, 8-10, 12-25, 25-50.....	E. H.	Parrett.....	H.
14-23, 18-30, 40-65.....	E. H.	Peoria.....	E. H.
Avery Track Runner.....	H.	Pioneer, 18-36 and 30-60.....	E. H.
Bates.....	E. H.	Plow Man.....	H.
Bates Steel Mule—All Models.....	H.	Porter.....	H.
Bear.....	H.	Port Huron.....	H.
Best Tracklayer, 30.....	E. H.	Prairie Dog, 10-18 and 15-30.....	H.
Best Tracklayer, 60.....	E. H.	Quadrupl.....	H.
Big Farmer.....	E. H.	Reed.....	H.
Big Four, E-B.....	E. H.	Reliable.....	E. H.
Billwell.....	H.	Rex.....	H.
Boring.....	H.	Rumely Oil Pull, 12-30.....	E. H.
Burnell.....	E. H.	Rumely Oil Pull, 16-30.....	E. H.
Capitol—All Models.....	E. H.	Rumely Oil Pull, 20-40.....	E. H.
Case, 10-18 and 15-27.....	H.	Rumely Oil Pull, 30-60.....	E. H.
Case, 22-40.....	E. H.	Russell "Big Boss," 20-35.....	E. H.
Case, 20-40.....	E. H.	Russell "Giant," 30-60.....	E. H.
Cletrac, 9-16 and 12-30.....	H.	Russell "Little Boss," 15-30.....	H.
Coleman.....	E. H.	Russell "Junior," 12-24.....	H.
Common Sense.....	H.	Samson Model M.....	H.
Dakota.....	H.	Savage A.....	E. H.
Dart Blue "J".....	H.	Shawnee, 6-12 and 9-18.....	H.
Depue.....	H.	Shelby Model C.....	H.
Dill Harvesting.....	M. H.	Shelby Model D.....	E. H.
Eagle, 12-22 and 16-30.....	E. H.	Square Turn.....	E. H.
E-B, 9-16 and 12-30.....	H.	Stinson Heavy Duty.....	H.
E-B, 16-32.....	H.	Titan.....	H.
Farm Horse.....	E. H.	Topp-Stewart.....	H.
Farquhar, 15-25.....	H.	Toro.....	H.
Farquhar, 18-35 and 25-50.....	H.	Townsend—All Models.....	E. H.
Fordson.....	H.	Traylor.....	H.
Flour City Junior, 20-35.....	H.	Triumph.....	E. H.
Flour City, 30-50 and 40-70.....	E. H.	Trundaar.....	H.
Fox.....	E. H.	Twin City, 12-30 and 20-35.....	H.
Four Wheel Drive Fitch.....	E. H.	Twin City, 40-65.....	E. H.
Frick, 12-20.....	E. H.	Twin City, 60-90.....	E. H.
Frick, 15-23.....	H.	Uncle Sam—All Models.....	H.
Good Field.....	H.	Vim.....	H.
Grain Belt.....	H.	Wallis.....	H.
Gray.....	H.	Wallis Cub.....	H.
Great Western.....	H.	Waterloo Boy N.....	H.
Hart-Parr—All Models.....	E. H.	Wellington, 12-22 and 16-30.....	E. H.
Heider—Model "C".....	H.	Westmore.....	E. H.
Heider—Model "D".....	H.	Wheat.....	E. H.
Holt Caterpillar, T-35.....	H.	Whitney.....	E. H.
Holt Caterpillar (5 Ton).....	H.	White.....	H.
Holt Caterpillar (10 Ton).....	E. H.	Wilson.....	H.
Holt Caterpillar (15 Ton).....	E. H.	Wisconsin, 16-50 and 22-40.....	E. H.
Huber Light & Super Four.....	H.	Yuba Ball Tread—All Models.....	H.
Illinois Super Drive, 18-30 and 22-40.....	E. H.		
Indiana, 5-10.....	H.		
International, 8-16.....	H.		
International, 18-30.....	H.		
J. T.....	E. H.		
Keek Gonnerman.....	E. H.		
Kinnard.....	H.		
La Cross.....	H.		
Lauson, 12-25 and 18-30.....	H.		
Leader, 18-35.....	H.		
Leader, 12-18 and 16-32.....	E. H.		
Leader, 18-35.....	E. H.		
Leonard Four Wheel Drive.....	H.		
Liberty.....	E. H.		
Little Giant A. & B.....	H.		
London Model S, 12-25.....	H.		

N. B. For recommendations of grades to use in automobiles and trucks consult chart at any Standard Oil Co. (Indiana) station.

2967

KEY

M. L.—Polarine Medium Light.
M. H.—Polarine Medium Heavy.
H.—Polarine Heavy.
E. H.—Polarine Extra Heavy.

BECAUSE an oil is suitable for your neighbor's tractor does not necessarily signify its adaptability to your engine. It may be right and it may bring disastrous results. In the light of present day scientific knowledge there is no need to accept the recommendations of laymen, when the expert advice of Standard Oil Company (Indiana) lubricating engineers is available. These men know the requirements of your tractor and know the correct oil to insure proper lubrication.

Under working conditions the clearance space between the piston and the wall of the cylinder is less than 1-1000 of an inch. To insure perfect operation of the machine this space must be filled with an oil of correct consistency to keep the moving bodies separated and yet allow them to operate easily and with perfect seal.

This illustrates the delicate problems which the engineers must solve in correctly lubricating the modern internal combustion engine to insure efficiency and long life. If the oil is too thin it will not hold the moving bodies apart; if it is too thick it will not flow freely.

Use

Polarine
THE PERFECT MOTOR OIL

It Seals Pistons Against Loss of Power

Made in Four Grades

**Medium Light
Medium Heavy Heavy
Extra Heavy**

The oil specified in the chart as correct for your tractor will reduce friction to a minimum, reduce your repair bills to a minimum, and prolong the life of your engine.

Polarine leaves no dry spots to rub together and score cylinders. The Standard Oil Company (Indiana) staff of lubricating engineers recommend Polarine as the correct oil for your tractor. Profit by their recommendation.

STANDARD OIL CO.

(Indiana)

910 So. Michigan Ave.

Chicago, Illinois

Releasing Stored Up Sunlight

Electricity Produces Illumination by Means of the Oils Nature Bottled up Centuries Ago

By F. J. St. JOHN

ALTHO I don't believe the good Lord ever meant that folks should keep their lights turned on all night, and dance and frivol away the wee morning hours under the bright lights, I do think it was intended that folks should use a reasonable amount of artificial light.

And while these irresponsible people who turn night into day and keep awake the folks who want to sleep are going a little too far, artificial light itself, all will agree, is a mighty good thing—tho the light itself, in times past, has been pretty bad.

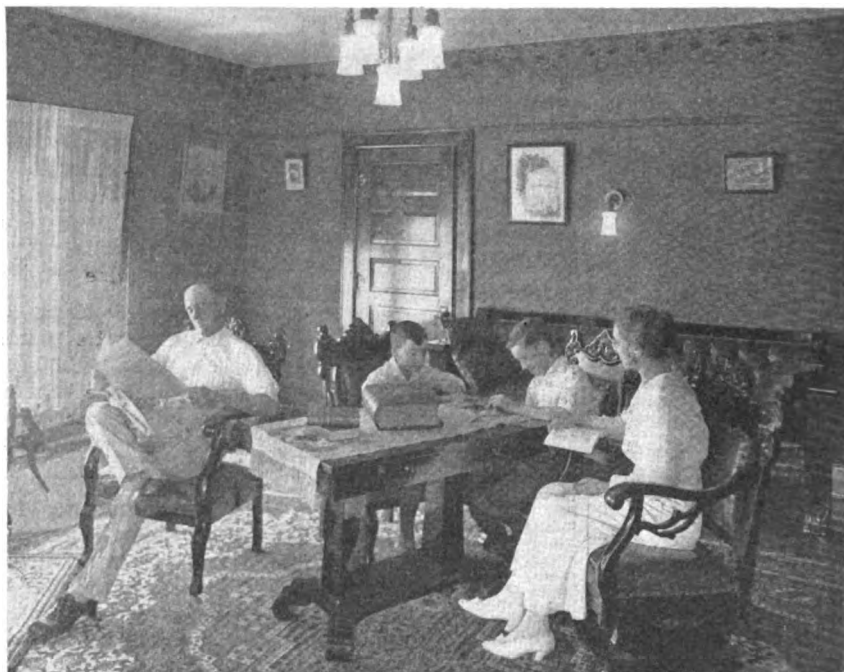
Artificial light, as everybody knows, is just the stored up sunlight, put away in one form or another so that those who didn't want to go to bed when it came night could go ahead and lengthen their day. Whether it comes from animal fats and oils, torches or some form of mineral deposit, the artificial light which somebody finally uses was sunlight once, stored up by the magic of a wonderful plan and called forth at the demand of humanity, maybe ages later.

You wouldn't think, to look at a gallon of kerosene, that it could be transmuted into radiant electric light, would

you? Maybe you forget that the sunlight of thousands of years ago is stored in that kerosene. It is just by employing the right process that the sunlight is released and the white glow of an

mitted to do is to flame up smokily in some old glass lamp—and smell—as a well-intended sunbeam was never meant to do.

Most of us know that there is a better



All the Family Get a Fair Chance to Enjoy Themselves in the Well-Lighted Home.



The Old-Fashioned Oil Lamp Was All Right in the Days when It Was the Best That Could Be Had, but Now It Is Pretty Poor When Compared with Electricity.

artificial light is projected against the darkness.

Right here we might pause to emphasize the fact that putting kerosene in one of these kerosene lamps that came into style away back in eighteen hundred and forty-something-or-other positively does not constitute the best method of setting free the sunlight imprisoned in that kerosene oil.

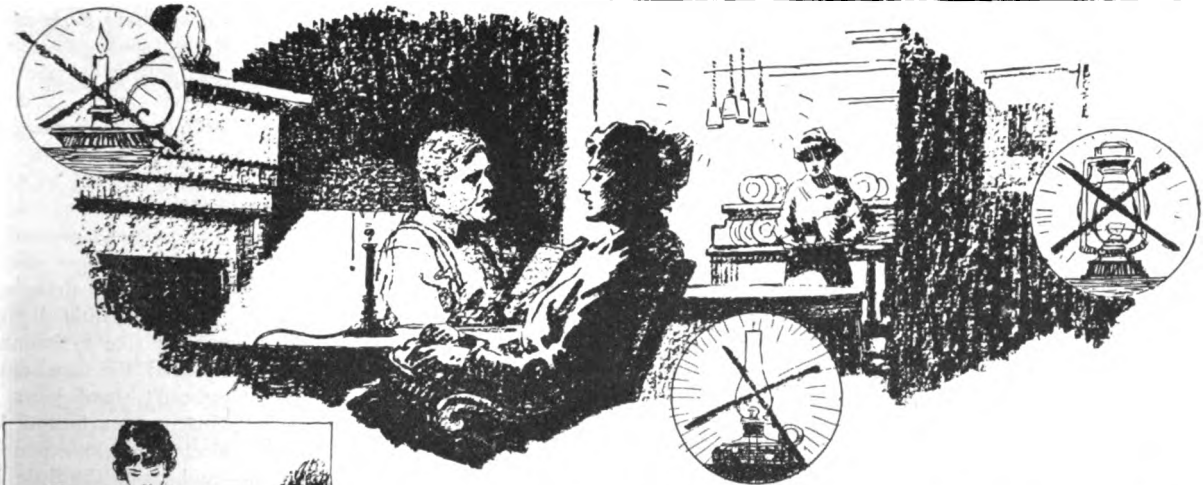
Judging from the murky, gloomy, smoky light that I have seen these old lamps produce, I imagine the sunlight that was released would rather go back to jail than come forth creating such a travesty on radiance and real illumination as it does when burned in an old kerosene lamp.

Pretty tough for the radiant sunlight, isn't it? Bright, shining, glorious, ages ago, it was entangled in the tropical foliage, let us say, of some luxuriant forest growth of the Carboniferous Age. Then it is borne to the surface of the old earth and refined as kerosene oil filled with the hope of being transmuted back into light again. What a failure of that hope when the best it is per-

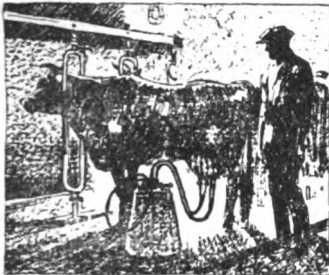
process of releasing the sunlight than the one just described. This is the modern way. Your kerosene is poured into the fuel tank of one of these farm electric plants. It is fired and exploded so as to run a motor, turning the electric generator. In an instant, electricity is produced—electricity which makes light, soft and white, without smoke or smell, a real reproduction of sunlight, a soft, radiant light—a light that no sunbeam need be ashamed to claim relation to.

Electric light is a light that any home can have. Let that sink in a minute. Any home can have electric light. That means any home can have sunlight day or night, if we'll just continue to regard the electric light as bottled sunlight—released when we press a button. And it is when a flood of bright electric light shines out in the home that you realize what a wonderful thing artificial light is and what a wonderful thing man has done, having his sunlight bottled so as to turn it loose whenever darkness made it desirable. Bet you never thought of that when you looked at some old, smoky kerosene lamp flickering away. But you

Certified Electric Service



Do your ironing with an electric iron heated with electric current from WILLYS LIGHT. Get through in one-third the time and feel as fresh and cool as when you started.



The sure way to avoid barn fires is to provide brilliant, electric light with WILLYS LIGHT. Also provides the steady, smooth power necessary to operate milking machines satisfactorily.

You Wouldn't Use a Tallow Dip

Why stick to kerosene lamps? When you install WILLYS LIGHT Certified Electric Service you are making a bigger move forward than your grandfather did when he bought his first kerosene lamp.

WILLYS LIGHT Certified Electric Service is immediate light. It is permanent power, smooth and sure. Press a button and you have it. Every hour of the day and every day in the year, wherever you want it and when you want it. No lamps to fill, no wicks to trim nor chimneys to clean. No more burnt matches and burnt fingers. Just a smooth flow of power and sure flood of light at a touch of the finger.

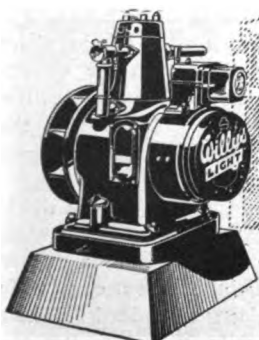
WILLYS LIGHT Certified Electric Service makes home more pleasant, comfortable and safer from fire. Everyone is happier. Chores get done in half the time. There is plenty of power for the washing, the ironing, the milking, the churning. Running water on tap in the kitchen and bathroom. And a flood of bright, cheerful light for every room in the house, the barns, the garage, the sheds and the poultry house—controlled at will by pushing a button.

The operating cost of WILLYS LIGHT Certified Electric Service is very small. The installing cost is far lower than you imagine. Any one of the painstaking, conscientious WILLYS LIGHT dealers will be glad to estimate your installation for you without obligation. He'll help you figure just what you need. He will include wiring, fixtures, installation, complete—the total cost ready to use, and then divide the amazingly low cost into small payments extending over a whole year if you wish.

You wouldn't use a tallow-dip. But isn't it a fact that all convenience, economy, and safety you get with WILLYS LIGHT puts the kerosene lamp on the shelf with the candles? Write us for the name of WILLYS LIGHT dealer near you and for free catalog of facts. Address Dept. 904.

WILLYS LIGHT DIVISION
The Electric Auto-Lite Company
Toledo, Ohio

Builders of over 3,000,000 electric lighting systems



\$295
and Up

There is a size to fit your needs—as much or as little power as you may require and terms of payment you can afford.

WILLYS LIGHT

Power and Light with the Quiet Knight

WHEN WRITING ADVERTISEMENTS PLEASE MENTION FARM MECHANICS



"Mother's Treadmill," a Relic of the Times Before Electricity Was Available for Light and Power.

did think that, didn't you, the first time you sat in a farm home, maybe miles away in the country and saw electric lights illumine the walls and ceilings of the rooms in that home.

And if, in that home there was a wife and mother who had toiled for years to keep a lot of lamps and lanterns in order, you thought, again, that here was a home where the light had come, in more ways than one—a home where a big burden had been lifted.

There is a picture with this article that I want you to study carefully. It is a picture of a shelf full of the lamps and lanterns that belong in a farm home. The sunlight is not set free so very

noticeably at night in this home, you can imagine. The worst thing about this picture is that it is not a bit overdrawn. Its like can be found in most any section of our country. Someone, the other day called the thing that this picture represents, "Mother's Treadmill."

I'm wondering whether it does not seem more of a treadmill to mother, now that she knows there are electric lights for her, if she can get them. The coal oil—or kerosene—lamps were bad enough when everybody knew they were the best lights that could be had. But certainly their drawbacks must stand out stronger than ever when one remembers,

as he or she must remember that he can have electric lights, real sunshine, illuminating the home whenever he will.

You probably never lighted the kerosene lamps on the ordinary dark days in the farm home. But, with the electric plant, you will turn on the electric lights when the gray days come. It doesn't cost much—a little extra kerosene and lubricating oil, that's all. You don't have anybody coming around to read a meter, charging a stiff rate for current. Fuel and oil costs will run around five cents per kilowatt hour, a low cost for electricity—and how it does drive away the gloom and the blues, little devils of despair that somehow like to haunt the house on days when the sun doesn't shine. But they can't stand your bottled sunshine. Just press a button, let a flood of your electric sunshine pour out into the home—and watch the little fairies of good cheer come trooping in. Gone are the little gloom devils! A bright-lighted home is no place for them.

Autumn, with the lengthening evenings, and winter, are seasons when the lighting question is one of much importance. We'll live more indoors during the coming months and we're more interested in the comfort and convenience of indoors, from the lighting standpoint than we are at other times of the year. In our northern latitudes there will be sixteen hours or more of darkness at certain seasons, in each twenty-four. Half that time we'll spend in sleep, perhaps and we must watch ourselves that we aren't half asleep the remaining eight hours.

Take the hours of evening, from twilight until bedtime. A book could be written around these hours, full of happenings and possibilities. Most of the latter demand light, the brighter the better. Only two classes of people can get along without much light during winter evenings: Young lovers who sit hand-in-hand before the fire and dream their dreams of a roseate future together—and elderly, gray-haired couples who have come up the road of life together and who like to sit in the firelight, tho not holding hands, and reflect upon the past.

All the rest of mankind who live in farm homes need light on winter evenings—the more light the better. The busy farmer needs it as he hurries about the barns and sheds with his chores. The housewife needs it as supertime approaches and she prepares for the time her hungry flock will descend upon her and demand to be fed.

There isn't a farm family in the whole country but what will start the evening better if they can sit around a supper table lighted brightly, with a clean, safe light such as electricity affords. There isn't a farm family in the country, on



A Well-Equipped, Well-Lighted Farm Home Kitchen Relieves the Housekeeper of Much Drudgery.

Shell and Grind

**with McCormick-Deering Shellers and Grinders
driven by International Kerosene Engines**

THOUSANDS of stock growers have found through experience that full profits cannot be made by feeding whole grain and ear corn to growing or fattening hogs. These men go further than that. They shell their corn and grind it, together with proper proportions of small grains. This extra care insures thorough mastication of the grain and its complete assimilation by the digestive apparatus.

Every man who grows stock for profit should be equipped to grind the feed. It is not hard work when you have an International Kerosene Engine for power, and McCormick-Deering Shellers and Feed Grinders to do the work. A few hours on a

rainy day now and then will give you a supply of nutritious stock food that will add many dollars to your year's profits.

If you will stop in at the store of the McCormick-Deering dealer, he will show you International Kerosene Engines in 1½, 3, 6, and 10 h.p. sizes. And while you are there, ask him about McCormick-Deering Shellers and McCormick-Deering Feed Grinders. The shellers are made in sizes ranging from hand shellers to 2 and 4-hole, and cylinder power shellers for custom work. The grinders are built in sizes and styles for every farm. Find out about these necessary machines next time you are in town.

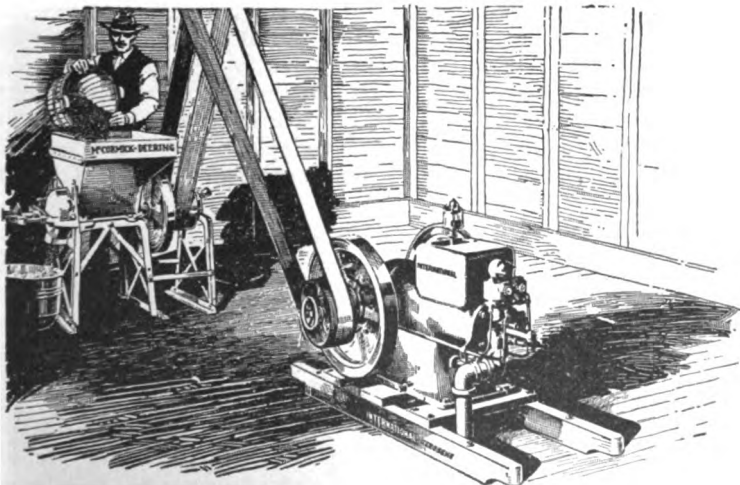
INTERNATIONAL HARVESTER COMPANY

CHICAGO

OF AMERICA
(INCORPORATED)

U S A

93 Branch Houses and 15,000 Dealers in the United States



When grinding feed for cattle many farmers grind both corn and cobs. Others grind husks, cobs and corn. McCormick-Deering feed grinders are made in styles to handle such grinding, as well as in the style for grinding shell corn and small grains only.



A Touch of a Button Gives Plenty of Bright Clean Light When Electricity Is Used in the Farm Home.

the other hand, but what will feel the depression created by a poorly lighted supper table.

Then when those few supper hours are over and the family is together around the fire, finally, is that blessed family group which I feel sure must have been planned as one of the most important incidents of family life! What about that family group? Can everybody see plainly, to read or sew or play games? Are there quarrels as to who shall enjoy the best light? Has mother been too rushed to look after the lamp and must it be filled and the wick trimmed before the family can settle down to its evening of comfort?

Imagine the family with electricity for lighting! A good ceiling fixture and maybe a portable lamp or two give everybody, from grandfather down to the littlest tot, just all the light they need. The light doesn't smell, it doesn't smoke, it is in no danger of being knocked over and settling the house on fire. It gives an abundance of light for the eyes—and it gives zip to the spirits and cheer to the heart.

It gives something to the family privileged to enjoy it that nobody can quite describe and something which must be enjoyed in order to be really appreciated. And thousands upon thousands are coming to enjoy the benefits of electric lighting as the months go by, farm home owners in numbers to make glad the hearts of all those who appreciate best how much of value it means to the farm home to adopt electricity for its

lighting. Not alone in dollars and cents—"value" wasn't in that sense exactly. There's a greater value, a satisfaction which we realize sometimes, thru stepping out, away from old, wornout surroundings and traditions. Putting electricity into the farm home is such a stepping out and—like enjoying the kisses of one's best girl, it cannot be done by proxy. It must be experienced personally.

A wide survey and investigation among the homes of those who have recently put in their own electric plants make me feel that the introduction of electricity into the farm home is one of the most important movements that has been made possible for the farmers of the present century. The farmers themselves who are using electricity declare that this is so and they, everybody will agree are in pretty good position to know that it is so.



Name the Farm

IF a farm is worth farming, it is worth naming. A good name helps to make a good farm. It dignifies the farm home and increases the value of the farm property. It adds permanency to agriculture and shows pride in the business of farming. A good farm name can be sold with the land as the good will of a firm can be sold with the business. Certain localities have become famous because of their good farms and the distinctive names that go with them. A good name is one of the first essentials

in building up a good reputation and a tradition for the farm.

A properly chosen farm name will go far in developing that sense of pride which is a fundamental basis for a more enduring and permanent country living.



Choice of Feeds Depends on Hay

BECAUSE oats, hominy, bran and gluten are likely to be the cheapest feeds this fall the specialists at the New York State Agricultural College suggest some combination of these four with a little oil meal and cottonseed as the best basis for a good dairy ration for the fall and winter.

The actual mixture to be used depends on the kinds of other feed to be used with it, the specialists say. For example, with low grade hay and corn silage they suggest a ration which consists of 400 pounds wheat bran, 200 pounds ground oats, 200 pounds hominy, 600 pounds gluten feed, 400 pounds cottonseed meal and 200 pounds oil meal. A simpler mixture which has about the same amount of protein with less variety consists of 500 pounds each of bran, hominy, gluten feed and cottonseed meal.

Farmers who have good mixed hay containing at least one-half clover re advised to feed an equal mixture of high and low protein feeds. For this purpose the college suggests a ration which consists of 500 pounds bran, 300 pounds hominy, 200 pounds ground oats, 500 pounds gluten feed, 300 pounds cottonseed meal and 200 pounds oil meal.



Purebreds Are Prolific

AN Ohio breeder reports figures in prolificacy that he claims are unequalled. Six Berkshire sows, litter-mates, farrowed Aug. 10, 1919, in their second litters that came from March 16 to April 12, 1922, farrowed 75 pigs in all, an average of twelve and one-half pigs per litter.

A New York breeder reports: Last spring we had eight sows in one unit, all farrowed by the service of the same boar. Their litters were as follows: 10, 11, 12, three of 13, one of 14 and one of 15. One of our sows has a farrowing average covering six litters of over 12.



EVERY season brings increased respect for the county agent and his work. Education and experience have made him a valuable asset to every farming community. He is ever ready to help with advice and a practical demonstration of his knowledge. Feel free to consult him and the better you get to know him the more you will appreciate his help, which is valuable and profitable.

LA CROSSE

No. 12 PLOW FOR THE FORDSON

Value-Plus

THE La Crosse No. 12 Plow has all the qualities a good plow should have, plus many features which make it particularly valuable to the Tractor User.

The Plus Points are those which count.

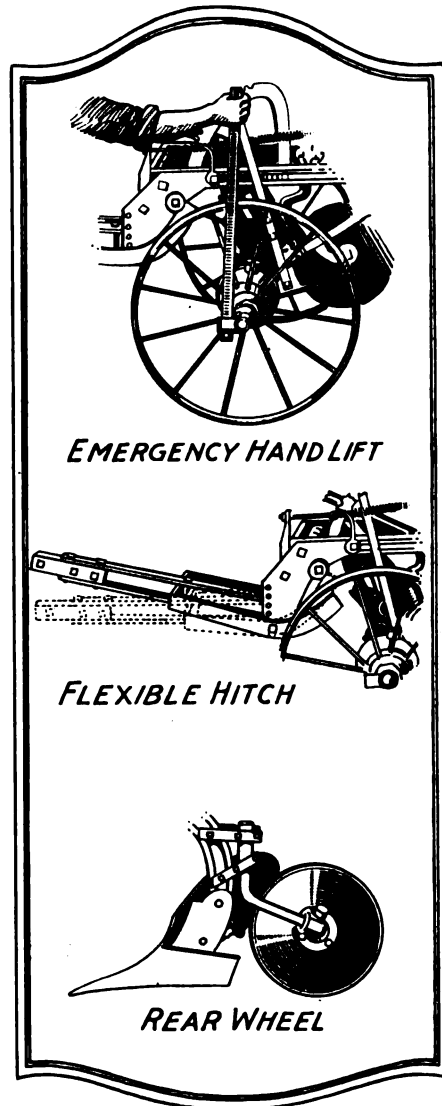
La Crosse Plows are *Light Draft Plows*.

The Emergency Hand Lift, which enables the operator to lift the plow when the tractor is not in motion, will save valuable time.

The Flexible Hitch allows the plow to hold a constant depth independent of the variations in the tractor drawbar. This guarantees an even seed bed.

The Adjustable Rear Wheel carries the weight of the bottoms off from the bottom of the furrow and away from the furrow wall. Elimination of landside friction means lighter draft — lighter draft means a saving in fuel and wear and tear on your tractor.

Write us today for further details.



LA CROSSE PLOW CO. INC.
"Makers of Light Draft Plows"

LA CROSSE, WISCONSIN

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

Operation and Care of Tractor

Some of the Troubles the New Owner May Experience and How to Meet Them

The Second of a Series of Three Articles, the First Having Appeared in August, Farm Mechanics

By F. M. SERVICE

Motor Stops Suddenly

Fuel Tank Empty: When a motor stops from lack of fuel, it will start missing and firing back thru the carburetor as the supply is gradually cut off and finally die away. There is no excuse for a tractor to run out of fuel, as the operator should always be sure there is a full tank before starting out.

Water or Dirt in Fuel: There is a sediment bulb on the bottom of all fuel tanks and it is there to catch the dirt and water in fuel. The specific gravity of gasoline is much higher than that of water and the water will settle to the bottom of the sediment bulb. If, however, the bowl in the sediment bulb is allowed to become filled with water, some of it will enter the fuel line and be carried into the carburetor, where it will clog the carburetor fuel nozzles and prevent easy starting, and may cause the motor to misfire and stop. During cold weather the water which accumulates in the sediment bulb and the gas line may freeze and entirely stop the flow of fuel, which will prevent the tractor from being started. This condition can then only be overcome by getting the tractor into a warm place where the ice can thaw out, or if this cannot be done, the carburetor, fuel line and sediment bulb must all be removed and thawed out. It cannot be too strongly recommended to frequently open the

plug or drain cock on the carburetor and fuel tank and drain off a small amount of fuel to remove the accumulation of dirt and water.

Loose Wire on Magneto or Ignition System: Where a motor shuts off suddenly without any preliminary missing or back firing, it is a pretty sure sign that the current to the spark plugs has been suddenly cut off, due to a loose or broken wire some place in the magneto or ignition system, or due to the breaker points in the distributor becoming out of adjustment or being badly burned. The first thing to do is start at the battery, if battery ignition is used, and trace the current thru the switch and up to the distributor points. If it is found that the current passes thru the switch and reaches the points, they should be inspected and if burned badly replaced, or if only slightly pitted they can be trimmed with a fine file until their surfaces are clean and true, then be sure that they make and break the proper distance as recommended by the manufacturers. After the points are correctly set, test out the ignition coil, and if the current is found to be entering the coil thru the wires leading from the points, see that a spark jumps from the heavy high tension cable on the coil when it is held about $\frac{1}{2}$ of an inch away from its terminal on the coil and the distributor points are opened and shut with the fingers. It is possible

for a coil to suddenly become shorted or burned out while a tractor is running, and if this is the case, no spark will be seen when the above test is tried. Of course when this happens the coil must be replaced with a new one. If, on the other hand, the ignition is by magneto and the motor stops suddenly as described above, the only things that can be done is to inspect the breaker points and see that they are clean and set at the proper clearances and that the distributor brush and contacts are in good condition. If these two things are all right and the magneto will not furnish current, then the trouble is in the wiring of the armature or a short in the magneto insulation and the repairs cannot be made by an amateur. The only thing to do is to remove the magneto and have an experienced electrical repairman correct the trouble.

Overheated Due to Lack of Oil or Water: When a motor is running short of water, it generally gives warning by starting to heat up excessively and pound, especially when the motor is accelerated and if forced to run by opening of the throttle when it starts to lose power, it will suddenly stop, due to the pistons expanding from the heat and freezing in the cylinder walls. This condition often causes serious scoring of the cylinder walls and sometimes makes it necessary to have the motor overhauled and the cylinders re-



At Harvest Time the Tractor Saves Labor, Increases the Acreage That Can Be Cut in a Day and Prevents Injury the Horses Receive from Long, Hard Work Under the Hot Sun.



I am the mule

Since time began, I've
borne men's burdens,
hailed their loads, with
only kicks and oaths for pay.
No other servant ranks
with me in sturdiness
and hardihood.

No other beast that man has
known can do the jobs that
I have done.

I scale the mountains,
creep in mines;
and when the hell of
war breaks loose, what
other being, or machine,
performs, goes through,
resists like me?

I never "buckle, bend
nor break"; I'm never "phased"
by heat or cold, and if I'm
stubborn, what of that?
It's stubbornness that
sees me through.

I wouldn't kick if now and then
someone would see my solid
worth and compliment me
in the way Tom Lehon did
and does.

He's named his roofing
after me and put my
picture on each piece,
because his goods
resist, stand up,
last long, like

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Three Mowers and a Tractor Make It Easy to Cut the Hay Speedily When the Weather Is Right.

ground. Lack of oil is first evidenced by a lack of power and a tendency of the motor to bind and often the loud tapping of the wristpins will be heard as they are the first bearings to become dry when the oil level is low. Next the pistons will squeak and the connecting rods start to knock as the bearing metal is melted out of them by the tremendous heat set up by the friction of dry metal to metal. When a tractor is new and is run without oil or with the oil level low, the motor may freeze up tight while running without showing any symptoms described above, but when this happens, scored cylinders are generally the result. If the tractor is handled by a careful operator, who, when the first signs of lack of oil show, will promptly shut it off and fill up the crank case with fresh oil, no damage may be done, tho operating at all with a low oil level is injurious to the wearing surfaces.

Fuel Mixture Too Lean: A motor will often choke and die away, accompanied by back firing thru the carburetor. This is caused by a too lean mixture of fuel to the proportion of air entering the cylinders and this mixture burns so slowly that the valves are opening on the intake stroke before the entire charge compressed on the up stroke has been burned, hence the mixture in the intake manifold is ignited and blows back thru the carburetor, which chokes the motor and often kills it. This condition is corrected by opening the needle valve and permitting more fuel to enter the carburetor. The ideal point is reached when the carburetor is set so that the motor can be accelerated quickly without the popping in the carburetor, and will idle without galloping or rolling.

Too Great a Load on the Motor: A new operator often finds that he will kill his motor constantly, especially

when starting out from a standing start. This is due to his putting too great a load on the motor by letting the clutch engage too quickly and with the motor idling too low. A little practice will eliminate this and in learning it is best to open up the throttle considerable first and then let the clutch in gently, giving the motor a chance to pick up the load gradually and without a quick jerk.

Motor Idled Too Low: Often a motor will stop when the gas throttle is fully retarded; this is due to the throttle butterfly valve closing too fully. To correct this trouble adjust the small screw that is on the throttle arm on the carburetor. Turning it in will speed the motor up and screwing it out will allow the motor to idle more slowly. The correct position is at the point where the motor will idle at the lowest speed, with the spark and gas levers fully retarded.

Motor Overheats

Lack of Water: When the water in the cooling system becomes low the motor will start to heat up and the remaining water will boil and give off steam. The motor will pound when picking up and run sluggishly. No harm will be done if fresh water is put in the radiator, tho if the motor is allowed to become very hot, it should first stand awhile before the cold water is put in, as a cracked cylinder is likely to be the result of the cold water suddenly striking the hot metal of the cylinder.

Lack of Oil: A low oil level in the crankcase will cause overheating, because the oil itself is a cooling medium and tends to keep down the temperature of the motor parts that are not cooled by the water jackets, and if there is not a sufficient amount of oil, the little there is will become very hot and the entire motor with it.

Fan Belt Slipping: The circulation of

air pulled thru the radiator and then thrown over the motor is an important factor in the cooling system, and the fan should be one of the first places to inspect when the motor overheats. There is an adjustment on nearly all tractors so that the slack can be taken out of the fan belt and it is important that at all times the fan should be turning at its maximum capacity.

Carbon in the Cylinders: Excessive carbon in a motor will cause overheating and can always be told by the loud pound heard when the motor is accelerated quickly under a pull. This pounding noise is preignition in the cylinders, due to the carbon deposits becoming red hot and firing the charge on compression before the piston is fully over dead center. There are two methods of removing this carbon deposit, scraping and burning out with oxygen, but the scraping method is always the best where the cylinder head is of the removable type.

Spark Retarded Too Far: When a motor will operate very smoothly, but without any power and will heat up quickly, it is generally due to the spark being set in too retarded a position. A too far retarded spark means that the spark plug does not fire the charge in the cylinder until the piston has passed over dead center and is on its way down on the power stroke. Hence, the compressed mixture of fuel and air has passed its highest point of compression, which is at dead center or when the piston is at its highest. Explode it then and it has not the same power to drive the piston down, as it has at dead center. So it will be seen that the proper place for the spark plug to fire is at dead center or slightly before the piston reaches there. To correct a retarded spark it is necessary to set the magneto or distributor slightly ahead, until this point or

(Continued to Page 57.)

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Boy Wins Success with Pure-Breds

Robert Gallagher, Who Lives at Maryville, Mo., Started With Six Sows and Now Has Herd of 100 Poland Chinas

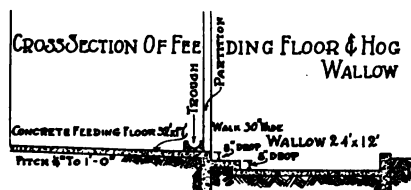
PURE-BRED hogs, Poland Chinas, are gaining fame for Robert Gallagher, a six-year-old boy of Maryville, Mo. Starting a year and a half ago with five sows, the boy now has a herd of nearly 100, is a member of the Poland China Record Association, and has been made a member of the Maryville Chamber of Commerce, thus gaining the distinction of being the youngest of the members of these two organizations.

Interest and knowledge of hog breeding and care come natural to Robert, for his father, who died about two years ago, was a successful breeder of Poland Chinas. After the boy's father died, he went to live with his grandfather, R. E. Thomas, near Maryville.

In February, 1921, Robert accompanied his grandfather to a sale of pure-bred hogs. He had expressed a desire to own some of the animals, and there purchased the five sows that were the beginning of his herd. Mr. Thomas, the grandfather, asserts that he allowed the boy to make his own selections and do his own bidding, and adds, proudly, that Robert showed rare judgment. Since that time he has managed the herd, attending to the feeding, the weighing and watching the animals when he is not in school. At his first sale, held a

year ago, he sold 27 animals, realizing good prices.

As the herd of hogs has grown, Mr. Thomas, who specializes in poultry, has added to the buildings on his farm. Recently, following a suggestion he saw in *FARM MECHANICS*, a feeding floor and wallow were constructed adjoining the hog barn. In the picture shown at the



CrossSection of Feeding Floor and Wallow on the Thomas Farm.

bottom of the page, Robert is seen giving some of his hogs a bath and at the same time filling the wallow with fresh water. A cross-section, showing the construction of the feeding floor and wallow, also is reproduced.

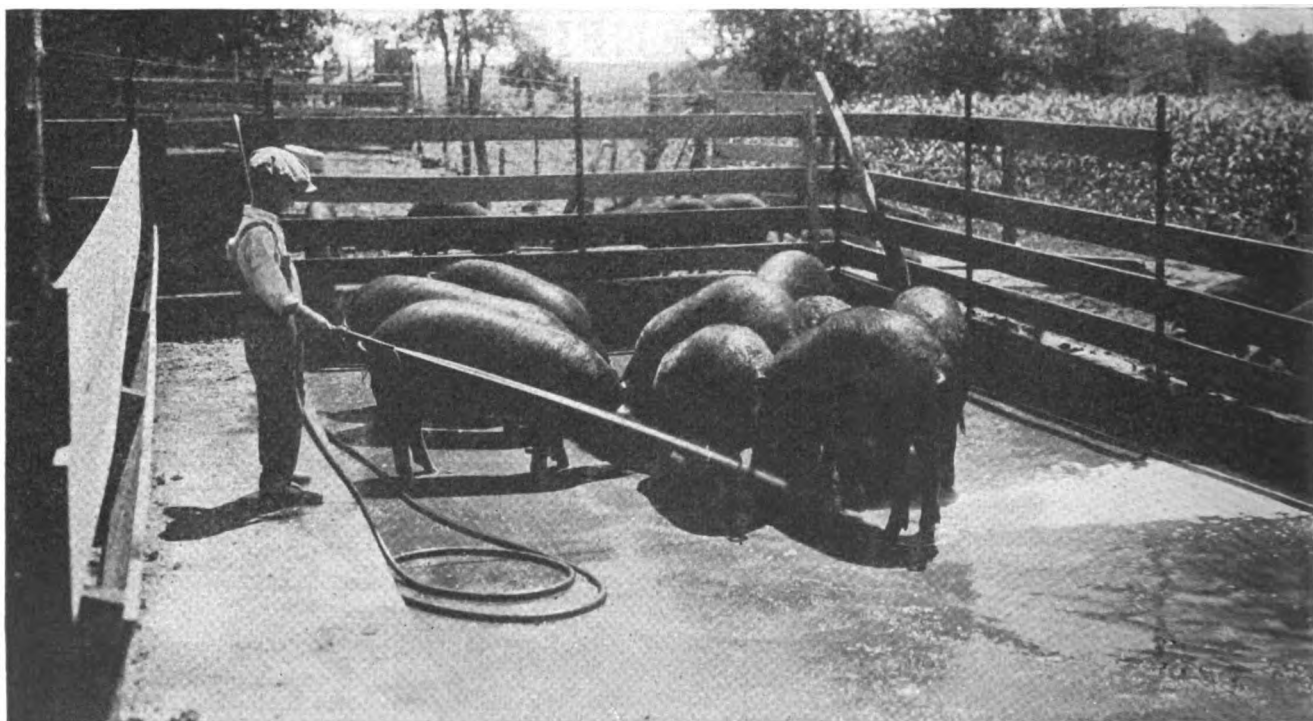
Besides having the distinction of being the youngest Chamber of Commerce and Poland China Record Association member Robert lives on one of the best electrically equipped farms in the state. Even the farm has a name that suggests electricity. The farm is known as the Electron Farm. With electricity Mr.

Thomas hatches and broods chickens, freezes his ice cream, runs his washing machine, makes his hens work early and late, protects his automobile from theft, and now he is installing a bell with which to call the hogs. Mrs. Thomas prepares the meals on an electric range.

All of the farm buildings are electrically lighted in such a manner that when going thru the barns he may turn on the lights as he enters one end and turn them off when he reaches the other. Over the hen house is another set of lights. "By making it light in the poultry house in the evening and in the morning during the winter months I can increase the egg production by about 25 per cent. When it begins growing dusk in the evening I turn on the lights. In place of going to roost the hens stay on the floor and keep working in the litter. About 8 o'clock I turn off the lights and they go to roost," said Mr. Thomas.

"Next morning I turn on the lights when I get up, the hens get down and go scratching and working. In a short time they lay and if I want to do so I can have fresh eggs for breakfast."

In the basement of the farm house is an electric incubator. The incubator is regulated by electricity. Along with the incubator is an electric brooder for the young chicks.



Robert Gallagher, Aged 6, and Some of His Pure Bred Poland China Hogs. Robert purchased the sows that produced these animals and spends his time, when not in school, caring for them.

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Force Feed Drill.
To Drill a Hole in Iron.
Disappearing Bench Stop.
Vise Jaw Faces.
Homemade Leather Punch.
Cup for Bit.
Repairing Gravity Oiler.
Preventing Shop Drawer Spills.
Tool Bag.
Cage for Twine Ball.
Mending Broken Strap.
Mounting a Grindstone.
Self-Adjusting Bench Clamp.
Sandpaper Block.
An Engine Protector.
Measuring Box of Concrete.
Use for Auto Tire Casing.
House for Pump Engine.

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Combination Bread Cupboard and Cutting Board.
A Hinge Broom Holder.
Table Adjustable in Height.
Oven for Oil Stove.
Ironing Board Cover.
Back-Saving Scrub Brush.
Useful Pin Cushion.
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Rotating Foot Scraper.
Buckles for Overshoes.
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To Tighten Clothes Lines.
Novel Seed Corn Tester.
Wool Tying Device.
Convenient Combination Ladder.
Seed Potato Cutter.

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Barrel Without Faucet.
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Tool for Fastening Tire Chains.
Piston Ring Compressor.
To Mount a Tire on a Demountable Rim.
Extension Oil Can.
To Jack Up Auto in Storage.
After the Collision.
Radiator Filler.
Re-Using Dry Batteries.
Swinging Door Fastener.
Cinder Remover.
Pull Out the Car.
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Pipe Under Concrete.

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Chicken Feed Silo.
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Dry-Mash Hopper.
Protects Water Supply.
Catch Chickens with Hook.
A Good Trap Nest.
Automatic Chicken Feeder.
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Poultry Fountain.
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To Anchor Fence Corner.

A Salt Box.

Handy Band Cutter.
Useful for Cutting Bands.
To Keep Plow Out of Ground.
A Good Salt Box.
Adjustable Flowing Measure.
Eliminates Jolts of Roller.
One-Man Crosscut Saw.
Making the Seat Ride Easy.
Prevents Backaches.
Corn Uncoverer.

A Simple Scarecrow.

To Move Heavy Tile.

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Handy Mail Box.

Mail Box Signal.

Making Spring Flow Clear.

The Both-Way Gate.

Pigeon Cote Weather Vane.

Improved Seed Flat.

An Adjustable Gate.

A Simple Bird House.

Garden Row Coverer.

To Tether Cow.

Support for Kettle.

Saw Horse.

Quick-Acting Latch.

Recovers Pump Cylinders.

Two-Way Gate Hook.

Gate That Lifts and Folds.

Handy Andy About the Farm.

The "Slip".

Simple Corn Unloading Method.

Sticks for Cattle.

Catches and Holds Hogs.

Easily Made Shoveling Stand.

Easy Livestock Loading.

Lightens Killing Work.

Wagon Box Unloader.

To Oil Cultivator Blades.

End Gate Fastener.

Brush Sled.

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To Rescue Mired Animals.

Gate-Closing Device.

Hog House Door Covering.

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Home for the Work Stock.

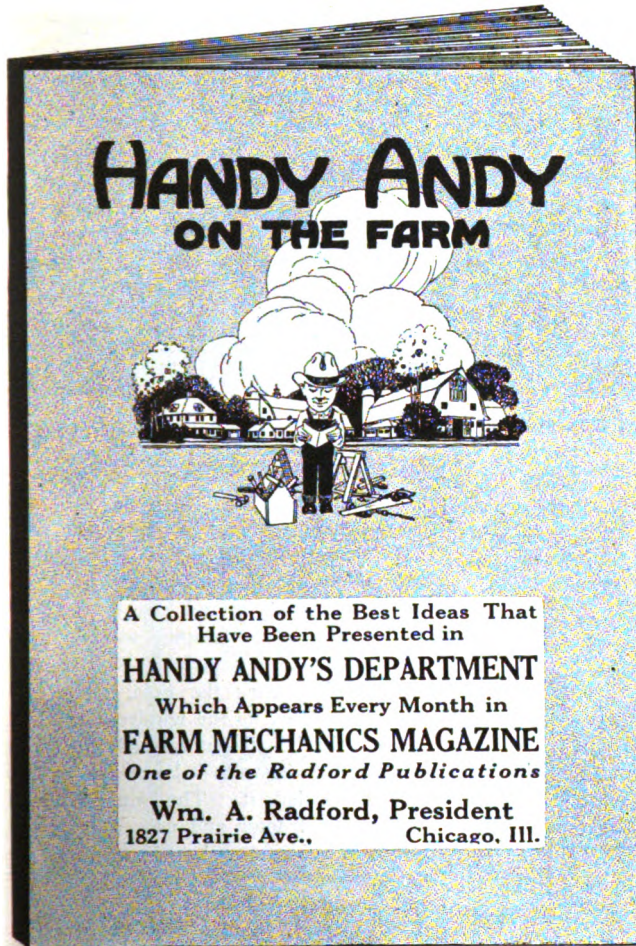
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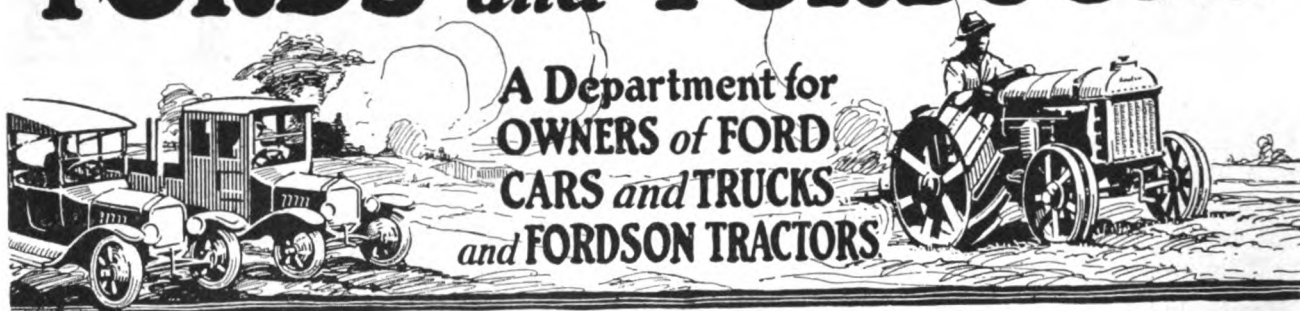
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Misplaced Confidence

ONCE there was a man who believed in mules.

"Mules," said he, "are like some men; all they know is how to work."

So mules and no other animals were used on his farm.

One day this man had four mules hitched to a wagon and a hay loader. Everything went well until the wagon was piled high with hay and the mules had all they could do to pull it. They responded nobly under the lash, and then mulish like refused to pull.

The lead team stopped. The gad was applied. Then the unexpected happened. The leaders swerved and the wagon



The Mules Worked All Right Until the Load Became Too Heavy for Them—

farmer to even listen to the merits of a tractor.

"Let me show you some power that beats mule power all hollow," the tractor man said. Whereupon he unloaded the tractor, cranked it and ran it into the field. Hooked to another wagon, with the hay loader attached, the tractor walked right thru the field, while the loader gathered up the windrows of hay so fast that it all but bushed the three men on the wagon to balance the load.

That settled it. The mule farmer bought the tractor and now uses it for all of his farm work, where power is needed.



IT'S cheaper to plan even the smallest building on paper first than it is to tear out after it's partly built.



Then They Balked, the Lead Team Swerved and the Wagon Tipped Over. Gone Was the Work of Four Men.

tipped over. The chain broke and the leaders ran away. Gone was a long stretch of work of four men, as well as a wheel of the wagon.

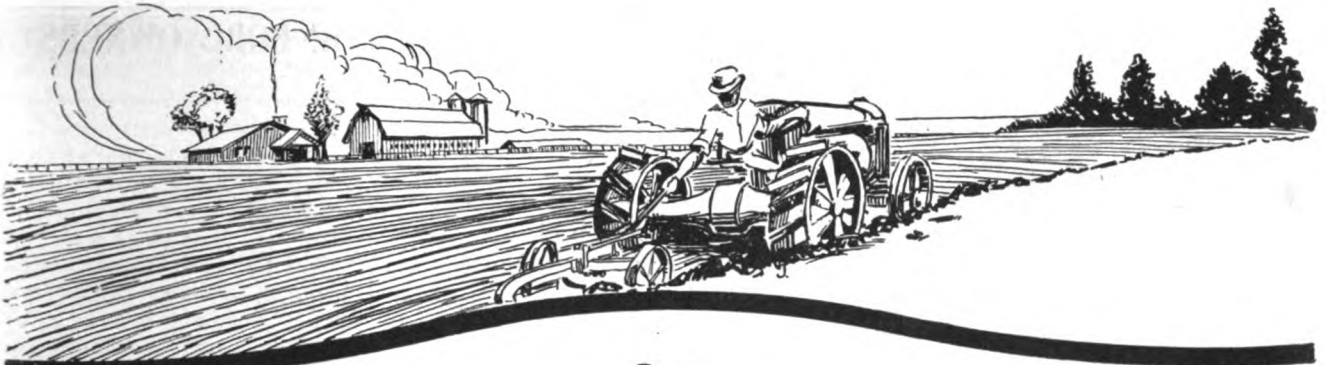
The mule owner was a victim of misplaced confidence: also he lost some of his faith in mules.

"Gol darn 'em," he exclaimed, "who'd ever thought they'd run away."

While he was ruminating on the uncertainties of mules, a truck with a tractor loaded in it hove in sight. The driver of the truck halted along side the hay field and inquired what had happened. When the mule owner related his experience, the tractor man grinned, for he had not been able to get the



Now the Mule Owner Has a Tractor Which Walks Right Thru the Fields and Pulls More than Anyone Ought to Expect of Four Mules.



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 And Cushion Draw Bar
 On Your Fordson** All Patents
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The Triangle Tractor Hitch is strongly built of steel. Not a casting in it. It is attached both to the front axle and the tractor draw bar, and pulling from two points increases many times the draw bar pull, putting the real stubborn pull into the Fordson.

In a daily demonstration at the Pageant of Progress a Fordson equipped with the Triangle Tractor Hitch, utilizing full motor capacity, a Governor insuring maximum motor power and the Miller Tractred wheels providing positive traction, the tractor loaded two large Baker-Maney wheel scrapers in hard ground without difficulty.

The two springs in the Hitch provide a perfect Cushion pull when starting every load, which is of great benefit to the Commercial Tractor; also acts as a shock

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When the plow point strikes a solid object the springs eliminate the sudden shock and the wooden pin can be broken under spring compression, thus protecting shares and beams and insures longer life to the Tractor and implements.

Permits shorter turning without rear wheels coming in contact with drawn implements. Can be used for binder Hitch.

Makes steering easier in soft ground, climbing hills or pulling heavy loads.

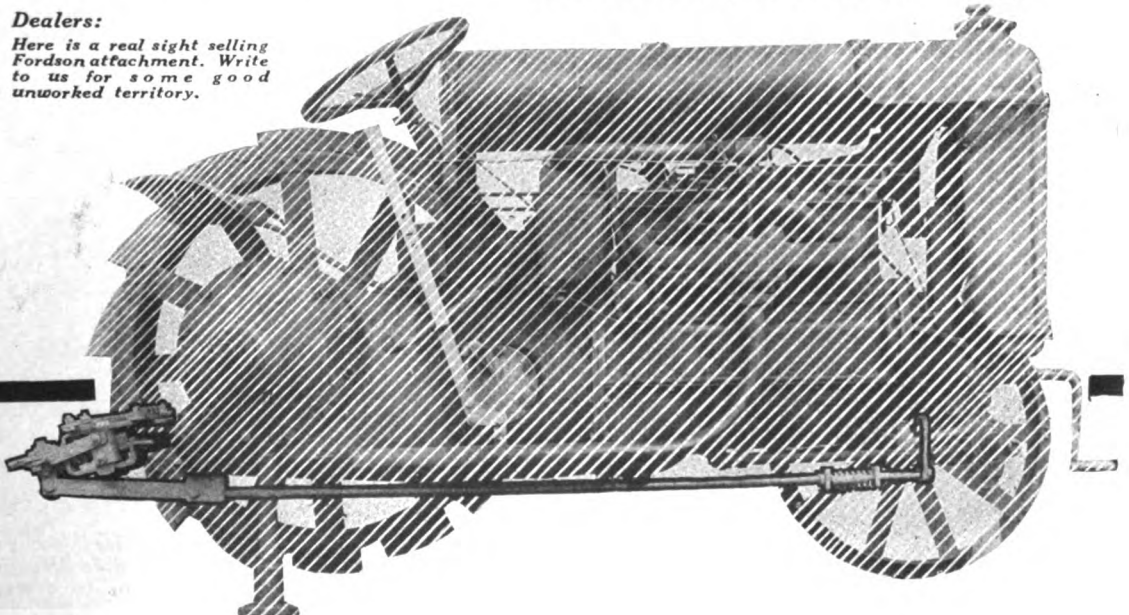
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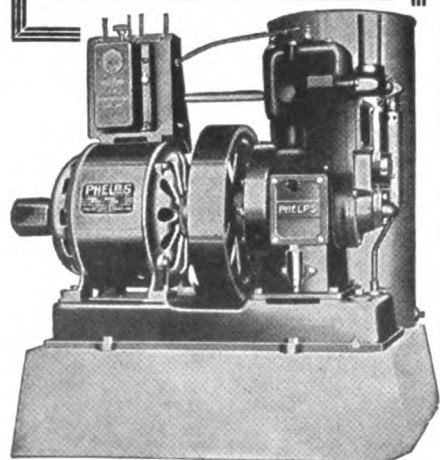
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WHEN WRITING ADVERTISERS PLEASE
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MOTOR TROUBLE ADVICE FOR FORD OWNERS

By F. M. Service

Oil Sump on Fordson

To the Expert:

You say you don't understand about the oil sump on Fordson tractor. If you look in chapter on the lubricating system in the Fordson Manual you will find that it says the later tractors are provided with an oil sump. I don't understand what this oil sump is for. What attention does it require?—WM. THEO. BROWN, Greenville, Pa.

Answer—From the wording of your first letter we were under the impression that you were referring to an oil pump and as the Fordson tractor does not use an oil pump, we were at a loss to understand your question. The oil sump as referred to in the Fordson Manual is simply the lowest portion of the crankcase into which any sediment in the oil will settle and can then be drained out when the drain plug is removed. There is no attention to be given to this, other than to drain off the old oil in the crankcase and refill with fresh oil frequently.—F. M. SERVICE.

✱

Lubrication of Fordson Rear Axle

To the Expert:

I would like to have you explain a few questions in regard to a Fordson tractor. This tractor has hard oil cups on the rear axle and I am using graphite hard oil. Is this right? The large hard oil cups are so low that it is impossible to use fluid oil according to the Fordson manual. The clutch pulley has loose play so it rattles around the drive shaft inside bearings.

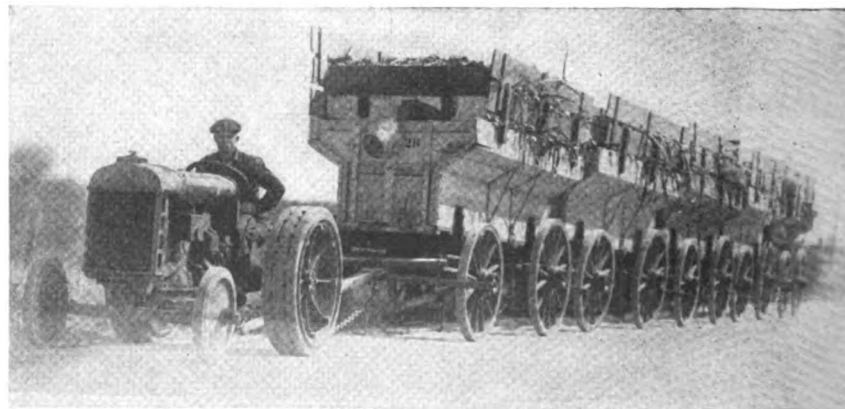
Also tell me how much horsepower on drawbar and pulley the Fordson tractor is rated.

I have a Ford car nearly new and there is a knock in the motor which is hard to locate. I had it repaired in the garage, but they are unable to find the cause. It sounds like tapping with steel hammer on a steel anvil. We take up the connecting rods and clean out the carbon, and you cannot notice it for a few miles. But a sudden opening of the throttle causes it to knock, especially when the motor is hot or when going up hill.—BEN WARTA, Sumner, Neb.

Answer—The hard grease you are using in the cups on the rear axle is all right, but be sure and screw the cups down often, as they lubricate the roller bearings on the axle shaft, which are subject to a great deal of friction and need plenty of lubrication. If there is play in the pulley shaft bearings, the only remedy is to replace these bearings, as they are of the ball bearing type and cannot be adjusted for play.

The Fordson is rated at 10-20 horsepower with a drawbar pull of 1,855 pounds at 2.73 miles per hour. The pulley is driven thru gears and travels at the same speed as the motor, developing 20 horsepower at 1,000 revolutions per minute.

The trouble with your Ford car would seem to be a loose piston pin or piston slap caused by a too tight piston pin, either of which will cause practically the same kind of a knock. To locate which cylinder is causing your trouble, cut out each one by holding down each of the vibrators on the coil unit until the knock disappears on one particular unit. The piston or pin in that cylinder will be the one found to be causing the trouble. It is best to replace both the piston and pin with new ones, as a very slight wear or tightness in either will often cause a very loud knock.—F. M. SERVICE.



The Hoopston Canning Co., Hoopston, Ill., Uses Six Fordson Tractors, Each of Which Hauls to the Canning Factory Five Wagons. The picture shows the wagons loaded with sweet corn, 3 tons to a wagon, and a total pull of 15 tons.

Operation and Care of Tractor

(Continued from Page 50)

the place at which the motor develops the best power is reached. In doing this it is best to set it ahead a very little at a time and it may take several adjustments before the motor will operate with full power and without overheating.

Fuel Mixture Too Rich or Too Lean: Too rich or too lean a mixture will cause overheating, as too lean a mixture will burn very slowly in the cylinders and too rich a mixture will create excessive heat from an overabundance of fuel. When the carburetor is set correctly the motor can be accelerated quickly without back firing thru the carburetor and will also idle at a low speed without galloping or rolling.

Water Circulation Retarded: The causes of this are, sediment in the radiator or water jackets of the cylinders, circulating pump not working, due to a stripped propeller shaft or broken propeller in the pump and rotted hose connections, stopping the flow of water by being swollen. In tractors using thermosiphon circulation there is no circulating pump and the trouble is generally confined to sediment in the radiator. A radiator should be drained and flushed out every short while and if this is not done, it is often necessary to remove the radiator and have it boiled for several hours in a soda or lye solution to remove the incrustated sediment that cannot be flushed out. Where overheating is caused by any of the above things, it can generally be told by the radiator being very hot on the top and comparatively cold at the bottom.

Dirty Spark Plugs: Dirty plugs will cause a motor to run irregularly and labor, which will cause it to heat up considerably. In cleaning the plugs be sure and inspect the porcelain for cracks that may cause them to misfire and foul up.

Lack of Water in the Air Washer: This trouble is only found in a tractor of the Fordson type or ones that wash the air before it enters the mixing chamber of the carburetor. The purpose of this air washer is to moisten the air and help to prevent preignition of the gas mixture in the cylinders, and when the water level becomes low the float cuts off the air supply and will cause the motor to misfire and heat up.



A BIG woodpile will be worth money this winter.



FARMERS who are getting the best corn this year are those whose seed was selected from the best of the standing stalks last fall. A word to the wise —.



Turner 2ⁱⁿ1 Timer-

For Ford Cars, Trucks and Tractors



Pat. 4 23-22

Sales on the famous Turner 2 in 1 Timer have never been so great as at the present time. Time and again our production has been increased (several times doubled) to meet the ever growing demand for this great product. Recent tests have shown the Turner 2 in 1 Timer going strong and showing very little wear at the end of fifty thousand miles. Has stood repeated and rigid tests for over five years and has proven a genuine quality article and a boon to every Ford owner. Increases power, insures an instant start in all weather, lessens fouling of two front plugs, saves gasoline and stops motor kicking. Is oil, grease and waterproof. Requires no oiling. Easily installed.

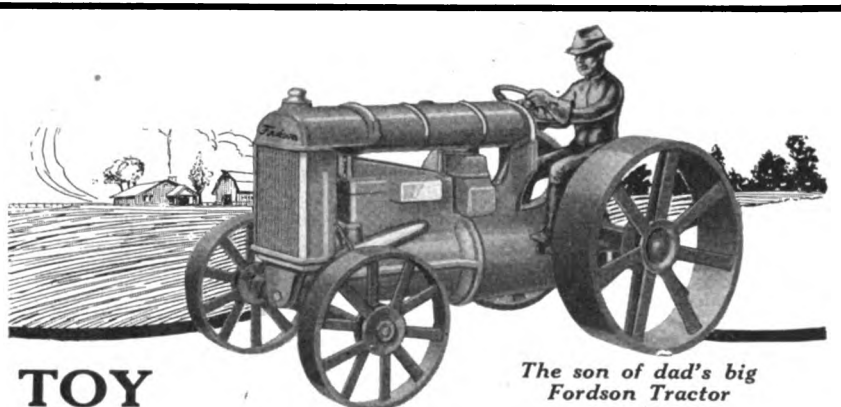
Price Complete with Wiring Assembly in Metal Conduit **\$3.60**

TURNER MANUFACTURING CO., Kokomo, Ind.

Also manufacturers of the following high grade products:

Turner Ford Foot Accelerator; Turner Spring Leaf Spreader and Lubricator; Safety Lightning Wire Assembly; Turner Door and Throttle Lever Extensions.

TURNER



TOY

FORDSON TRACTOR—
makes farm boys see the fun in work

Boy farmers can play running a straight furrow, turning a corner, or running a land close to a fence. **Makes them want to grow up to be real farmers.** The Toy Fordson Tractor never gets out of order.

Brightly painted in red and black. Swivel axle makes it run easy on rough ground. Fun for girls, too!

Made of cast iron. Weight, 1 1/4 lbs. Size, 6 inches long.

Hardware and Implement Dealers and general store owners are writing us daily for prices on this Toy Fordson Tractor that sells so readily and gives boys such an interest in farm machinery.

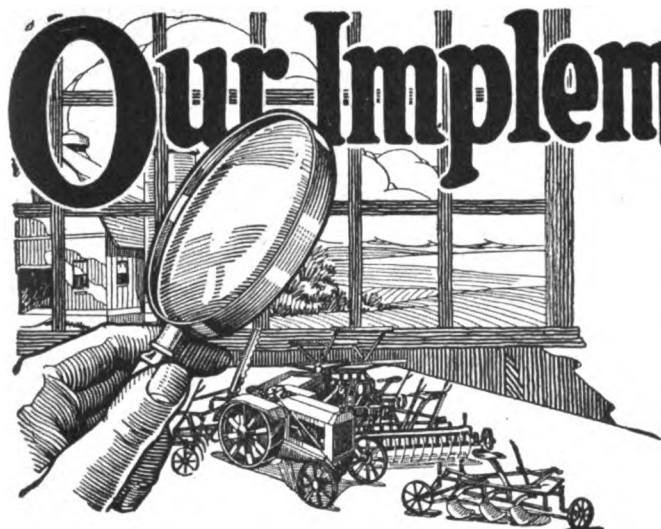
ARCADE MANUFACTURING COMPANY
FREEPORT, ILLINOIS

Originators of the Famous Toy Yellow Cab, The Toy Sensation of America

Our Implement Inspector

HE finds much new and worth-while farm equipment offered to increase efficiency and cut down labor.

EDITOR'S NOTE: Farm Mechanics does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address Farm Mechanics Information Exchange, 1827 Prairie Ave., Chicago.



A New Type of Grain Binder

THE harvest thru which we are just passing has witnessed the satisfactory testing of a brand new type of grain binder. The ordinary grain binder gets its power from the main wheel and therefore can be used with horses or any other form of power. This new binder is for operation by tractor only because the binder receives all the power to operate its mechanism from the tractor.

There is no question but what future development in farm machine design will be largely along the lines of developing machines which will receive their power thru a power take-off attachment on the tractor rather than thru traction or driving wheels of the machine itself. The new power-driven grain binder is the first of these new machines.

The power-driven binder is a combination of the perfected grain binder and the modern farm tractor. The tractor

pulls the binder as in the common practice, but instead of the binder mechanism being run by the binder main wheel, it is driven by a revolving shaft from the tractor. The power that cuts, harvests, and binds the grain comes steadily from the tractor engine regardless of the condition of the ground. This arrangement enables the binder to be run at a more uniform rate of speed. This direct positive drive prevents slippage and choking where conditions are bad. It cuts the grain clean. The steady flow of power from the tractor to the binder makes it possible to cut a wider swath than with the ordinary binder. It also enables the grain to be cut in wet spots and to handle down and lodged grain with more certainty.

Next year will witness a much more general use of this type of binder by wheat growers. Practically doubling the capacity of one man at harvest time is no small accomplishment, yet that is what the new power-driven binder does. Fifteen to 20 acres is what the horse-

driven binder ordinarily harvests in a day, while the new power-driven binder easily handles 30 to 35 acres.



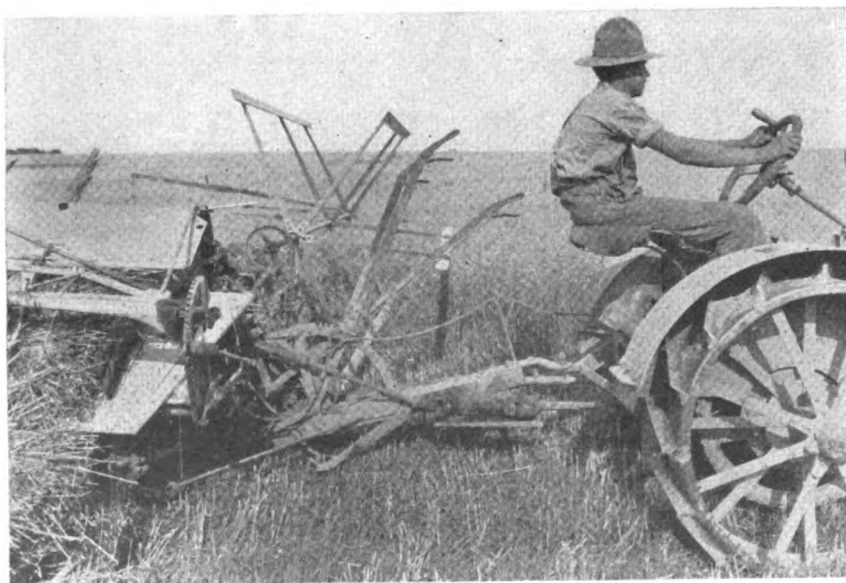
Keeps Lubrication Oil in Tractors Clean

EVERY tractor owner and operator knows that the condition of the lubricating oil in the machine has much to do with its efficient operation. When the oil is low, or dirty, or mixed with fuel, there is loss of power, spark plugs become fouled and the cylinders are liable to get filled with carbon. Also it is expensive to keep the machine filled with fresh oil.

Airplanes, which are operated with throttles wide open much the same as are tractors, had this same trouble during the war. Lubricating engineers set themselves to solve the problem of reclaiming the oil that frequently was drained from the high power, speedy engines. It was thus that the vacuum process of reclaiming oil was worked out.

This same process that was used on airplane engines has now been applied to tractors. A small device, that is constantly sucking the oil from the crank case, refining it and returning it from whence it came, has been placed on the market and is attached to the engines of tractors or automobiles. It is shown in the accompanying illustration attached to a Fordson engine.

This is known as a vacuum lubricating oil refiner. It draws by vacuum, the same as the manifold sucks in the fuel, the oil from the crank case, heats it to the boiling point, which takes out the fuel oil that becomes mixed with it; carries this vaporized fuel oil into the manifold where it is used for power; cools the refined lubricating oil and returns it to the crank case. This process goes on continually, the refiner drawing about four ounces each minute and

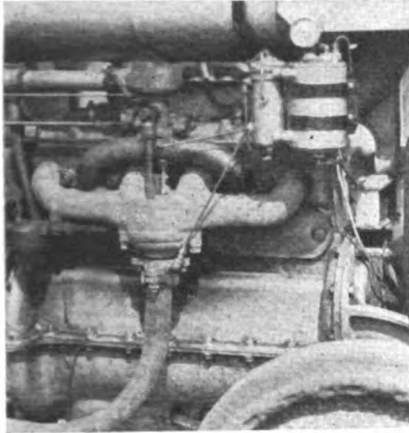


New Type of International Harvester Grain Binder That Is Operated by Power from the Tractor Rather Than from the Binder Wheels.

all that the crank case contains each hour.

In detail the operation of the refiner is as follows:

The diluted oil is piped from the crank case thru a heater that is placed in the exhaust. The heated oil then passes to the filter or cleaning compartment,



Device That Takes the Oil from the Crankcase and Cleans It.

where it is filtered under a vacuum. It then flows to the refiner proper, which acts as a still, where the fuel in the diluted oil is boiled off under a vacuum. A liquid will boil at a lower temperature under a vacuum. Oil will not carbonize when heated under a vacuum. The vacuum that operates the refiner comes from the intake manifold and is the same force that draws in the fuel and air thru the carbureter. A vacuum pipe connects the refiner with the intake manifold. This vacuum pipe carries back to the engine the heated gas that comes from the fuel boiled from the diluted oil. The heated gas is burned up in the engine as power. The cleaned and refined oil then flows to a cooler that is placed back of the radiator fan. After the oil is cooled to the proper temperature it flows back to the crank case.

It is claimed that this refiner will keep the dilution in the oil below three per cent, when gasoline is used, and almost as low when kerosene is the fuel. Besides the saving in oil, there is a smoother and more powerful running engine and with the lubrication that clean oil gives there is longer life to the engine.

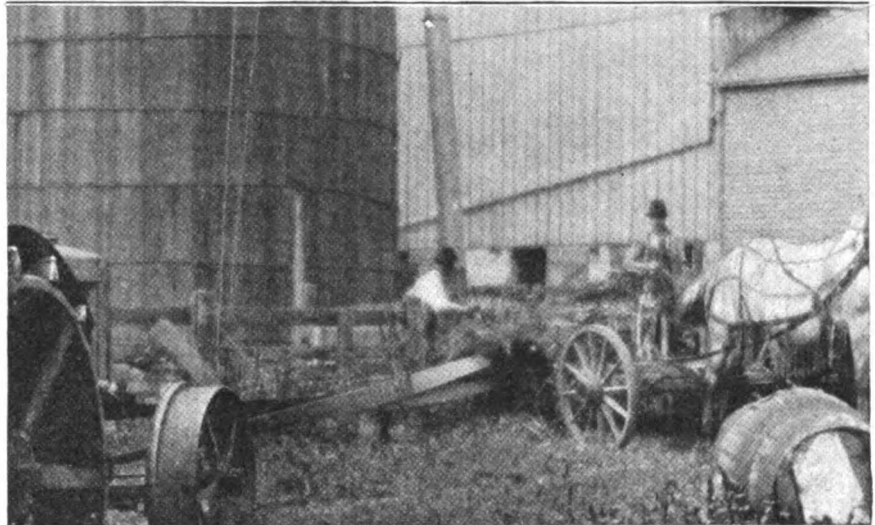


Magneto and Governor for Fordson Tractor

EFFICIENT operation of any internal combustion engine depends a great deal upon the ignition system delivering a large hot spark when the gas mixture has reached its greatest compression in the cylinder. To ac-



STEADY POWER—AND GOODYEAR BELTS



"In every line of duty," says Harold H. Holtzman, of Wheaton, Illinois, "the Goodyear Klingtite Belt is a powerful belt. I have used mine for threshing, silo-filling, corn-shelling, hay-pressing, feed-grinding and wood-cutting, and without question it is the most satisfactory belt I have ever seen in a lifetime of farming.

"On all heavy drives," such as ensilage-cutting and silo-filling, it delivers the full power steadily and sturdily, so that there is no jamming either at the cutter or in the stackpipe.

"It holds the pulleys in a slipless grip. Yet it runs so freely that there never is any need to worry about overheating the engine bearings. I have run it in hot weather, in cold, and in rain. It always performs just the same."

Goodyear Klingtite Belts are specially designed as equipment for the best farm power implements. They need no breaking in. They require no belt dressing. Their ply construction so distributes the load that separation is unknown to them. They outwear ordinary belts by a big margin of serviceable life.

Efficient, economical, Goodyear Klingtite Belts come in endless type for all heavy duty and in suitable lengths for water-pumping, cream-separating, churning, electric lighting plant, washing machine and other light drives. For further information about them, write to Goodyear, Akron, Ohio, or Los Angeles, California.

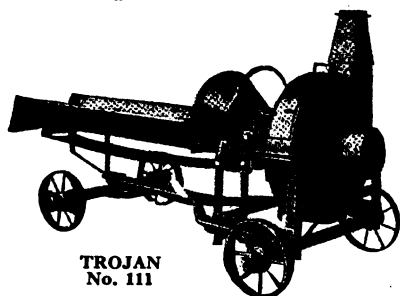
Goodyear Means Good Wear

GOODYEAR
KLINGTITE BELTS

Copyright 1922, by The Goodyear Tire & Rubber Co., Inc.
WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

Partners in Service

IF you are contemplating the purchase of an ensilage cutter, here are two sturdy, reliable machines well worth your highest consideration.

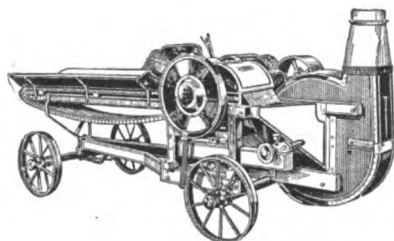


TRAJAN
No. 111

First, they are built to last a lifetime by men with more than 20 years experience to guide them.

Second, you are offered a choice of two distinct types of cutters: The Trojan No. 111 (Flywheel Type) and the Safety-Automatic (Cylinder Type).

Third, each machine is fully equipped with all modern improvements, including Hyatt Roller Bearings on the Trojan No. 111.



SAFETY-AUTOMATIC

Practical Men

You men who have been "on the job," who have learned from experience what a cutter should do, will appreciate the interesting facts and photographs we have gathered together in book form. If you want to get acquainted with our machines, just say the word and we will forward everything by return mail.

The I. B. Rowell Co.
WAUKESHA, WIS.

to accomplish this result there has been brought out a magneto made especially for the Fordson tractor. And coupled with this magneto, altho it is a separate unit, is a governor that automatically maintains the speed of the engine under a light or heavy load. How this combined magneto and governor is installed on the Fordson and a drawing showing the construction of the equipment are shown in the accompanying illustrations.

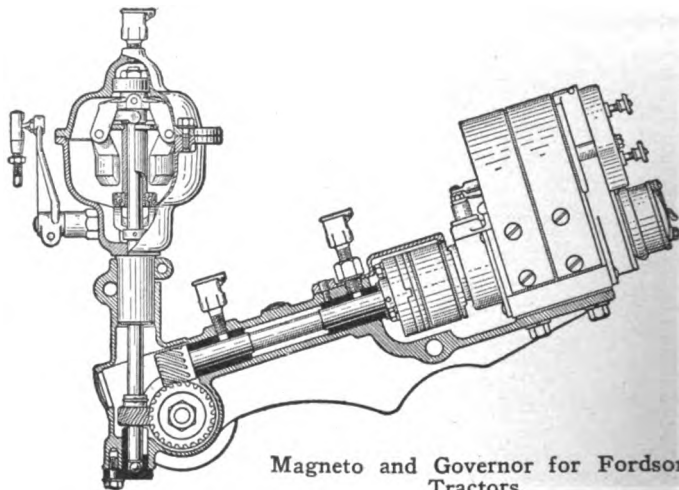
The magneto has but one pair of contacts which are operated by two cams, which are practically indestructible. Consequently there

is never any variation in the timing of the sparks in the different cylinders. The magneto produces big flame-like sparks that fire the gas charge in each cylinder completely and at the proper instant. This gives a smooth, even flow of energy to the drive wheels and increases the power of the tractor, enabling it to do more work. It also makes the operation of the tractor more economical because it prevents fuel being wasted thru late ignition or failure to burn.

The governor maintains the speed of the engine under all conditions, and altho it is mounted on the same fitting as the magneto it operates entirely independent of it. It saves oil, gas and undue wear on the pistons and bearings which result when the load on the tractor varies to any great degree. This even speed of the engine also makes plowing easier on the tractor and the furrows more uniform.

When the Fordson is used for belt

work, a man to watch the tractor is not required, as it may be throttled to the desired speed and the governor maintains it. The governor is dust and waterproof and requires no attention beyond filling the oil cup twice a day while the tractor is being used.



Magneto and Governor for Fordson Tractors.

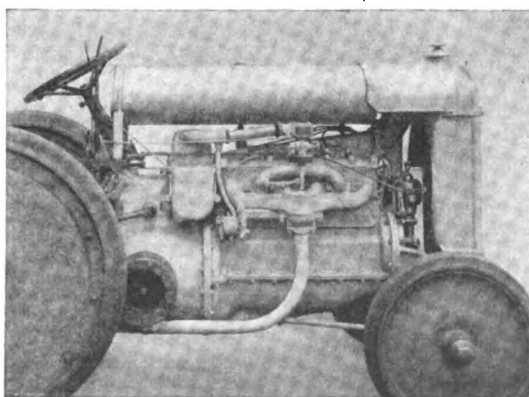
Equipped with a magneto of this type, it is claimed, all misfiring and vibrations are eliminated, while the governor keeps the engine running at a smooth, uniform rate of speed.



Fordson Attachment to Kill Quack Grass

THE problem of killing quack grass has been largely overcome by the use of a special "cultivator" attachment for the Fordson tractor. The past season being very dry and hot these machines were used to the very best advantage. In operation the attachment pulverizes the soil, quack grass, and roots. The idea is to tear up the grass, with the machine, let the sod lie in the hot sun to dry and burn. After this machine has been used it is necessary to cultivate with a spring-tooth harrow once a week for two months. During the following season planting corn is recommended, so the field can be properly cultivated, and thus keep the quack grass from starting again.

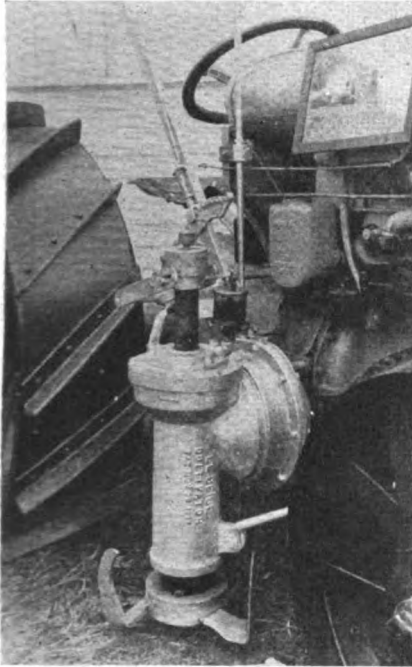
This device is attached to the Fordson in the same way as the power pulley. It is gear driven and controlled by a jaw clutch, the latter being operated by a hand lever. At the lower end of the main shaft are the three knife blades. The vertical shaft is splined for raising and lowering, and turns in anti-friction bearings. In oper-



Magneto Installed on a Fordson Tractor.

ation the machine works like a plow, making a burrow, and leaving the tilled soil the same as a plow does.

The cutting knives revolve at a speed of 500 r.p.m. cutting from 12 to 16 wide according to the adjustment, and from 1 to 5 inches deep. It is capable of covering from 3 to 5 acres per day, and weighs 325 pounds. It cuts the soil



Whirling Knives That Cut and Destroy the Quack Grass.

so that the land side is like that plowed, but the other side has the dirt thrown out in a sheet for a distance of about 12 feet. In this action of throwing the dirt so far, the roots and grass, being lighter, stay on top.—E. R. W.

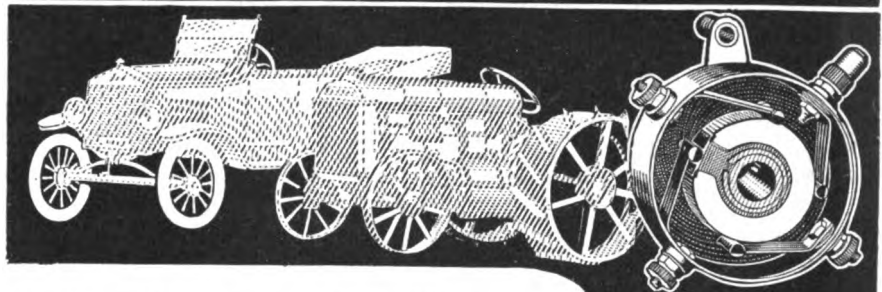


Separate Blades for Sickle Bar

THERE has been little change in the mower knife since the mowing machine was first placed on the market, many years ago. Recently, however, there has been placed on the market a sickle bar which utilizes the separate blade idea of the safety razor. In fact, the makers have very appropriately called it the "Safety Razor of the Fields."

The bar itself consists of a top and bottom strip separated by spacing pieces, the whole bar being welded together into one rigid unit. Each blade fits into a separate pocket between the top and bottom strip, the pockets being formed by the spacing pieces. The blade is held firmly in place by a ball-locked wedge key. The bar was put in practical field operation on many farms in

U & J Timers for Fords



Will Stand the Wear In the Field—On the Road

Fordson Tractor work is especially hard on timers. U & J Rotor Timers for Fordson Tractors have been especially designed to stand up to this kind of work and are guaranteed to outwear five ordinary timers in similar service. They are also guaranteed to give a red-hot spark with perfect timing every mile of their life.

By the Rotor principle it gives a wide contact of steel on steel that insures the hottest possible spark. The Rotor, made from specially prepared fibre is the only moving part and will not deteriorate in ignition or timing efficiency on account of wear.

For Fords and Fordsons

15 Days Trial Money-Back Guarantee

Every dealer is authorized to make this proposition. Every farmer is a prospect for two timers—one for his Ford car, the other for his Fordson. Every U & J user immediately becomes a U & J booster. Write for terms and information and ask about the U & J Accelerator with its Adjustable Foot-rest and Guide—the only practical foot-throttle applicable to all Ford Motors. All steel—nickel. Same price, terms and guarantee as timer. "Puts a Ford in the big car class."

U & J CARBURETOR CO.

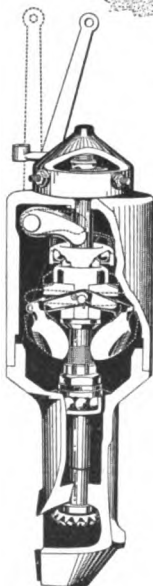
Exclusive Manufacturers of U & J Motor Devices

Main Office and Factory: 2853 South Halsted St., Chicago

Pacific Branch: 357 Van Ness Ave., San Francisco

\$250

HOW MANY SOILS ARE IN A FURROW



IN no field are soil conditions constant. The pull of the tractor varies many times in every furrow due to changing soils. One furrow may have clover sod, clay, sand, gumbo, loam—all of which require a different pull from the tractor. It is the business of the STANDARD GOVERNOR to smooth out such difficulties.

The STANDARD GOVERNOR will cut repair costs, decrease fuel costs, prolong the life of the Ford Truck or Fordson Tractor, and pay for itself many times over by increased efficiency in field and road work.

The STANDARD GOVERNOR has many points of mechanical superiority. Because of its all 'round high quality, it cannot be sold for a price as low as the prices set on inferior makes. It does everything that a good governor is supposed to do and it performs those duties efficiently, economically and lastingly. It is very easily installed.

The automotive dealer who is not selling his share of *Standard Governors* is passing up an opportunity in his territory. The *Standard Governor* is a fast selling device that gives the dealer a quick turnover and gives the truck or tractor owner lasting satisfaction. Write us today for prices and further information.

KOKOMO BRASS WORKS, Kokomo, Indiana

New York, 245 W. 55th St.
Chicago, 1430 Michigan Ave.

BRANCHES:
San Francisco, 32 Van Ness Ave

Detroit, 4610 Woodward Ave.
Boston, 15 Jersey St.

STANDARD GOVERNOR



Vulcanize Your Cuts or Punctures in 5 Minutes

No tool-kit is complete without a Shaler 5-Minute Vulcanizer. It is a necessity and the greatest convenience ever offered to the motorist.

Why take chances with cold patches when you can make a heat-vulcanized repair that will "stick"—even outlast the tube—in five minutes?

The Shaler 5-Minute Vulcanizer is easy to use—you need only a match. Always ready—never bothered by wind or storm. Cannot injure or burn the tube. No gasoline—no danger of fire.

Get a Shaler 5-Minute Vulcanizer from your dealer. It will soon pay for itself by the saving in time, trouble and tire repair bills.

Complete Outfit \$1.50

Slightly Higher in Canada and West of the Rockies

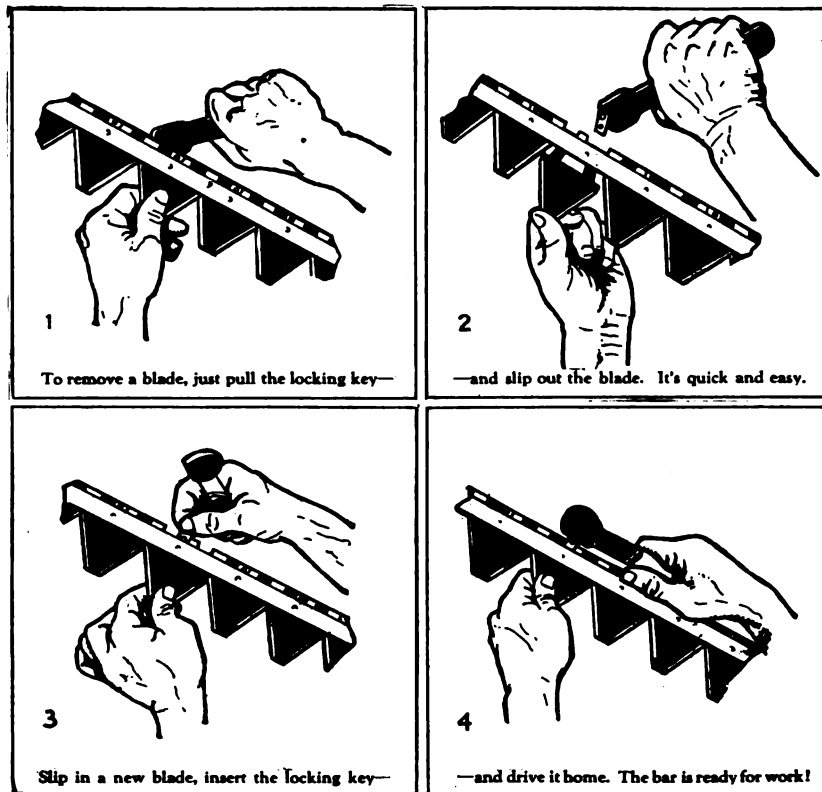
The outfit includes the vulcanizer, 12 Patch-&-Heat Units (6 round for punctures and 6 oblong for cuts)—ready to use—with complete instructions. Extra Patch-&-Heat Units 75 cents a dozen.

C. A. SHALER CO.

2263 Fourth St., Waupun, Wis.



WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS



Showing the Four Operations of Taking Out and Replacing Broken Sickle Bar Blades.

New England for the past three years before it was offered for national distribution.

The many advantages of such construction are perfectly apparent. It is only the work of a minute to replace a dull or broken blade as shown by the illustrations. A few blades can be carried in the toolbox and repairs made in the field. This obviates the necessity of carrying spare bars and also eliminates the troublesome operation of riveting in new sections.

It is also much easier to grind the blades to a keen cutting edge clear down to the heel as each blade can be ground separately. The dull blades can be allowed to accumulate, saving the grinding until after the season is over.

The head is welded to the bar and the entire bar and head is rust-proofed. The bars are made in different lengths and types to fit all standard makes of mowing machines.

This bar was shown at the state fairs all over the country where the exhibits are arousing a large amount of interest.



Select Your Seed Potatoes Now

NOW is the time to select your seed potatoes. No one can select seed potatoes from the bin and be sure of securing disease-free seed. Several of our most serious potato diseases are

carried from year to year in the tuber and it is impossible to tell by the appearance of the tuber whether they are diseased or not. Mosaic and leaf roll are two of the most important diseases of this class. The only way to be sure of clean disease-free seed potatoes is to secure seed from healthy potato vines.

Due to the fact that the potato is propagated by tubers which are underground stems of the parent plant, every tendency, good or bad, which the parent plant may have is transmitted by the tuber to the new plant. This is one reason why potatoes are subject to more diseases than almost any other crop.

Of the many diseases which attack the potato none is more serious than mosaic and leaf roll. These two diseases are responsible for a large proportion of the so-called running-out or degeneration of potatoes. Leaf roll and mosaic have been called "virus" diseases because, like certain human diseases it has not been possible to find the "germ" which causes them. The juice from the diseased plant when passed thru the finest filter known will still cause the disease to develop in a healthy plant if injected into it. These diseases are spread in the field by certain insects and from year to year by diseased tubers. The only remedy for these diseases is to secure seed from healthy potato hills and from a field of potatoes which is fairly free from disease.

Farm Facts

Condensed Items of Interesting Information

Farm population of the United States numbered on January 1, 1922, 31,614,269 persons, according to the figures issued by the Department of Commerce. This is 29.9 per cent of the total population of the country.

Beanboards, a new feed for cows, is being manufactured in Darien, China, and is being exported to this country. The boards measure 12 by 28 inches and are $\frac{3}{4}$ of an inch thick. The boards are made of ground beans, such as is used in beancake, but are subjected to greater pressure, lessening the amount of moisture in them and making them less liable to become moldy.

More than 400,000 tons of crude rubber will have been produced this year, while the consumption of rubber will be about 300,000 tons. This is one of the reasons that automobile and truck tires are cheaper than ever before in the history of the industry.

Hogging down corn and feeding tankage in a self-feeder brought a return of \$48 an acre, according to the experiments conducted by the Kentucky College of Agriculture. Hogging down corn and soybeans sown in the same row brought \$35 an acre; corn alone produced \$25, while soybeans hogged down and corn hand fed returned only \$14.

To test the relative return of soybeans and cowpeas a Kentucky farmer planted two fields side by side. The production was 3,000 pounds of peas and 4,000 pounds of beans per acre.

Why not give the old pasture a square deal by a liberal top dressing of manure and a good dose of lime this winter? asks the New Jersey College of Agriculture.

Thirty cents invested in soybeans for seed returned \$8.50 an acre in nitrogen, as well as the beans, investigation by the Kentucky College of Agriculture fertility experts show.

A good many New Jersey potato growers increased their yields 50 to 100 per cent in fields that have been properly sprayed by home made Bordeaux mixture this year.

Bessie, a purebred Ayrshire cow, owned by John Smith, of Brainardville, N. Y., produced 8,623 pounds of milk and 358 pounds of butter in six months. Her feed cost \$75.50 and her product sold for \$218.75, leaving a profit of \$143.35. "Good cows pay," is the comment on this item of the New York State College of Agriculture.



I don't need to make a guess about my gas, or hunt for my measuring stick. My Ford is entirely dependable now. I haven't missed an appointment or been stalled out of gas since I installed a

TASCO GAS GAUGE

Jim has one on his Chevrolet 490.

All we have to do now is to raise the cushion and there is the Tasco Gauge in place of the old tank filler cap. Anyone can put one in, in a few seconds, just unscrew your old filler cap, throw it away and replace it with the Tasco Gauge. Throw away your broken measuring stick too—if you can find it.

Type "A" is used on the old style roadster with round tank, and also on the old style touring car.

Type "B" medium length, is used on the new touring car and roadster with oval tank.

Type "C" short length, is used on the square tank for sedan and coupe, also Chevrolet "490".

AKRON SELLE CO. - - AKRON, OHIO

AKRON SELLE CO., Akron, Ohio

☐ I am a dealer. Send me one dozen TASCO GAUGES at wholesale price. Dealer.....Jobber.....

☐ I am not a dealer. Send me one TASCO GAUGE TYPE A.....TYPE B.....TYPE C..... for which I have enclosed \$1.25.

Name.....

Address.....

\$1.25

"Don't Park Here"

or in fact anywhere unless your Ford is equipped with a Security Auto Lock. It's the only safe lock.

A turn of the key—pull up the wheel and take out the key. Security Auto Lock has the approval of Underwriters' Laboratories. Absolutely Thief Proof.



Security Lock, Steering Wheel with Aluminum Spider and 17-inch Corrugated Walnut Rim—

FORD DEALERS Security Auto Lock

is the big seller for Fords. The proposition is a good one. Write to us about it. Lock sent on approval.

SECURITY AUTO LOCK CO.

410 North Paulina Street

CHICAGO, ILLINOIS

Security Cap
Lock

Approved by Underwriters' Laboratories
The Original Loose Wheel Lock for Fords



Our Readers Are Requested to Make Free Use of this Department for Questions and Answers on Modern Farming and Farm Improvements

Farming in Oklahoma

Editor FARM MECHANICS:

As a subscriber to your paper I thought perhaps you might be interested in our view of the agricultural situation and therefore I send you herewith certain pictures which show what we are trying to do in our part.

Having a controlling interest in certain lands near here we ventured to do some farming ourselves. We hunted some time for the proper man and finally contracted with an A-1 agricultural school graduate to handle our farming operations for us. The following is a gist of our contract.

He does the work. We furnish everything except his groceries. He receives \$50 per month salary and one-third of



On the Farm of the Commercial Trust Co., Near Enid, Okla.

all garden truck, poultry, eggs, milk and butter. He gets no interest whatever in any of the crops raised by us.

We agree to furnish each year for the first three years not less than five cows. As far as possible we will exchange all male calves for heifer stock. We agree to furnish sufficient land for the raising of all necessary feed crops.

If he stays with us five years he gets a one-third interest in all cattle and they are to be divided with him at the end of the fifth year. He gets no interest in the cattle whatever unless he stays the full five years, but we have a provision whereby in case of death during the fourth or fifth year his family will be suitably cared for pro rata.

But to make a long story short we are raising diversified crops. We have perhaps 150 bushels of wheat in the stack

feeding some 125 fine young pullets. No threshing bill for us. The chickens do the threshing. We have some ten acres of the finest cowpeas you ever saw. We have a crop of kaffir coming on and are just finishing the first crop of Sudan grass—60 acres of it. And that you may see how we raise feed we enclose the pictures for your inspection. Eh. Two and sometimes three crops per year of feed like that. You tell the world. Diversified crops for us and the stock to do the threshing, etc. No grain hauling for us.

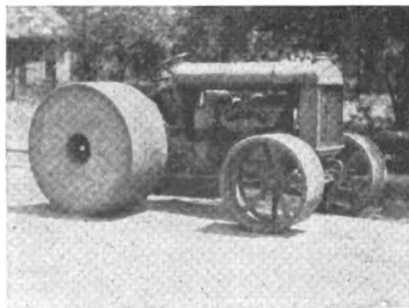
COMMERCIAL TRUST COMPANY
OF ENID, OKLA.



Road Roller of Fordson

Editor FARM MECHANICS:

By removing the original wheels of a Fordson tractor, substituting golf course wheels, and filling the extension rims with cement, Mautz & Green, road builders at Effingham, Ill., with the help of W. F. Eakin, made a light roller that is proving very serviceable to them in their road-building work. This strange little machine has some distinct advantages over the heavy steam and horse rollers; it is much handier; it is ready for use at any time without waiting for steam to be got up. It is a handy machine on road work, for it can be turned in a short space. It has been found that this lighter roller leaves a much smoother surface than the heavier steam roller. The front wheels have 14-inch treads and the rear wheels 20-inch treads. With the cement filling



Fordson Transformed into a Road Roller.

added, the weight of the tractor has been brought up to about 5,000 pounds.—G. F. P.



Lighting System Run Off Belt

Editor FARM MECHANICS:

I would like to know what size generator a six horse power Novo gasoline engine would conveniently run, and the installation of a lighting system accordingly.—ROY E. DRAPER, Waterport, N. Y.

Answer—A six horse power gasoline engine will drive a 2,000 watt generator and would easily charge up a 250 ampere hour battery. The ordinary farm lighting plant is of the 32-volt type and an outfit of the size mentioned above would light all the light you would have any use for of this voltage and besides furnish current to operate up to a four-horse power electric motor. There would be 16 cells of storage battery needed and the necessary wiring could be done without using conduit or special wiring, as a 32-volt circuit is not likely to cause a fire if it becomes short circuited.—F. M. SERVICE.



Save Soybean Seed

NOW that corn and soybeans are maturing in all parts of the state, many farmers who have the two crops growing together are wondering how they can harvest enough bean seed to plant soys in all their corn next year. Pulling a half ton or more of beans and stalks, storing them in the barn for a while and then later flailing them out is perhaps the best method of solving this problem, according to Ralph Kenney, soils and crops specialist of the Kentucky College of Agriculture.

"A half ton of beans and stalks can be pulled with little difficulty and thrown into a wagon bed driven thru the corn field. Leaving the stalks and the beans in the barn until late winter before the seeds are flailed out is a first class method of storing them, since they are kept loose and dry. If the beans are threshed immediately after being

pulled, they are apt to be ruined if they become damp afterwards or are damp when threshed.

"Commercial seed growers usually have one and a half tons of soybeans straw from a crop that yields 20 bushels of seed an acre. Since this is the case, a half ton of good dry bean stalks and pods can be expected to yield five or six bushels of good, bright seed. The beans do not crack to a serious extent when flailed and are not molested by rats and mice when stored in piles."



Select More Than Enough Seed Corn

WHEN gathering seed corn select from three to four times as many ears as will be needed for next year's corn acreage, suggests Ralph E. Johnston, extension agronomist at South Dakota State College.

"By doing this," he says, "there are enough ears to permit of a selection of the best ears for seed. This is necessary because every ear picked in the field is not a seed ear and some ears will fail during the germination test. If there is any surplus of this seed it readily sells at a good price and it often happens that such seed comes in very nicely to plant the fields the second year.

"In looking for the proper ears to pick, select them from vigorous stalks that show vitality, early maturity and as large a size as will mature each year. Pick from disease-free stalks. Do not select from stalks that are dead ripe or prematurely ripe. Select ears from stalks that still show some green or signs of still having some life, because such stalks are maturing after a natural manner and are healthy. The husks covering ears on these stalks should show a change in color indicating that ears are ripening.

"Ears should be selected from stalks which have yielded best in equal competition with other stalks. Select ears that are at a convenient height on the stalk. Ears should be on medium short shank which will allow ear to take a dropping position. Do not select ears with broken shanks, as this is ordinarily a sign of disease. The ears should be examined and those showing good kernels well dented, straight rows, well filled and of the proper size and type for the variety, should be selected.

"Select before a killing frost and as soon as the corn is mature. If corn is too large or late a maturing variety, it may not mature ears early enough. In this event select the good early ears or secure an early variety."

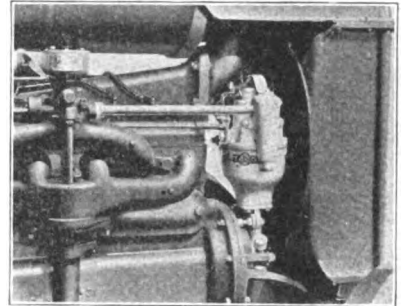
Fordson Owners! Buy the Governor

Preferred by the Leading Tractor Manufacturers

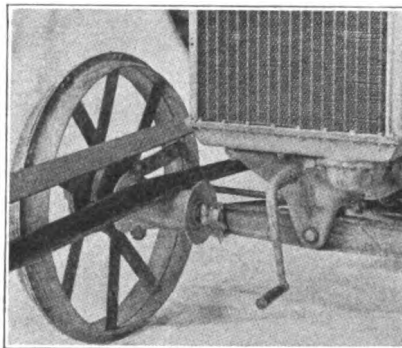
The "woods" are full of vacuum and belt driven governors for Fordson's. But don't let anyone persuade you to put one on **your** tractor. No tractor manufacturer would even consider one of these types as equipment. On the contrary, all of the 200 models of tractors on the market are equipped with **gear driven, fly-ball governors**. That's the only type to buy, and to be sure of getting the most satisfactory gear driven, fly-ball governor, specify **TACO**. Over 50,000 TACO Governors now in use. Nine manufacturers now equip their tractors with TACO Governors. Every TACO sold on an absolute guarantee.



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FORDSONS



Taco Model "A" Flyball Governor for old style manifold Model "B" for new style manifold.



TACO Ball-Bearing Belt Guide

You get your money's worth when equipping your Fordson with the TACO BALL BEARING Belt Guide. It will save its cost on one expensive belt and will outwear three or four of the cheaper belt rollers. Prevents belt from riding on axle and actually permits motor to show more power at the driven pulley. Price now \$7.25 f. o. b. factory.

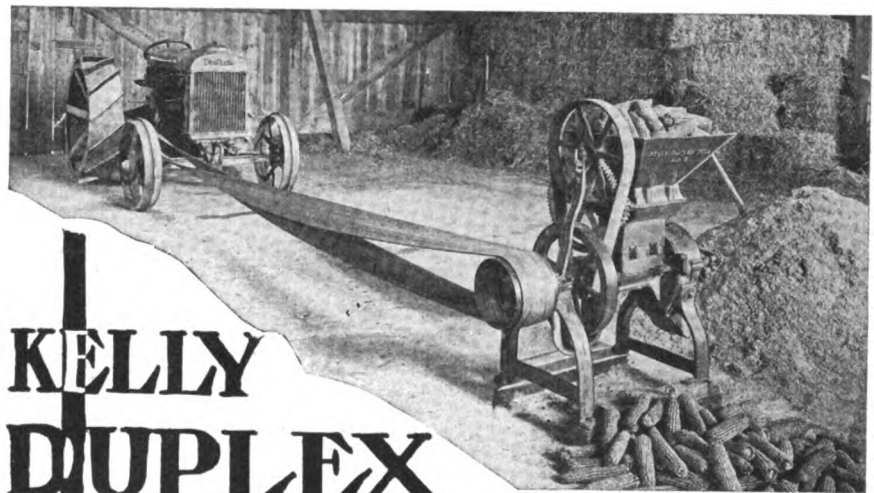
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The Fordson is the best little tractor in the world—Give it a fair chance—specify TACO equipment.

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SPRINGFIELD, OHIO



Helps for the Housewife

MECHANICS in the HOME



Plan Kitchen Well

**Woman's Workshop Should be
Light, Airy and Well Equipped**

NO farmer would ever think of preparing a thousand meals a year without every labor and step-saving device on the market. Nor should any farmer's wife be expected to prepare them in a kitchen that is less comfortable and convenient than the stable is for the livestock. Anything in the way of arrangement and equipment that will make kitchen work easier, or enable her to accomplish more in the working day, is

just as good an investment as a well-equipped barn, a silo, tractor, or milking machine. Livestock that is well housed and well cared for and well fed produces more. So does the family that is well fed and cheerful and the mother who is not overworked and tired and cross after a sixteen-hour day in a kitchen 25 years behind the times.

Even if you are not building a new house, or a new kitchen, there are a number of things you can do to the present one to make the woman's work easier, and give her a more comfortable

place to work. Many of these are little things, that can be done by the men-folks at home with a few hours' time some rainy day, and involve almost no expense. There is no end to the number of mechanical devices that will increase kitchen efficiency if money can be spared for them. These can be bought one at a time, for mother's Christmas and birthday—she'll appreciate them a heap more than something to wear. Plan for them while you are building or remodeling the kitchen.

Here are some of the things you should thoroly consider before you O. K. any plan for the kitchen.

1. Location—In olden times the north side of the house, the poorest outlook, or generally most undesirable position determined the location of that much-abused room, the kitchen. Nowadays, many sensibly-designed houses give the kitchen a front location, equally as pleasant as that of the living room. Why not? The housewife spends more hours a day in her kitchen than in the living room, and often the other members of the family do, too. Give your kitchen just as pleasant a location as is justified by the use you are going to make of it.

2. Light—Sometimes it is hard to get the proper amount of light in the kitchen, because of the need of many built-in cupboards and closets and doors. Be sure not to sacrifice light for anything less important than light is, however. Have the upper half of all outside doors glazed. If at all possible, have outside openings—windows or doors—on two sides, to insure a good circulation of air, which will carry off cooking odors. In many kitchens a single drop-light from the center of the ceiling is the only artificial light provided for evenings and dark days. There should be a light above the sink, above the range, and in each supplementary place, such as pantry, entry, basement, dining alcove, and another near the built-in ironing board.

Light is also increased by using white or light colors in painting the woodwork and walls. White is preferred by most women. It does not require more frequent cleaning than any color should have, and repays so well for the labor expended upon it. Light shades of gray and tan are also good. The walls



Pumpkin Pies! Mother likes to make them and all the family like to eat them, especially when they are made in a well-planned and equipped kitchen.

can be washed if painted or covered with washable paper, such as is used in bathrooms. If you use any curtains at all, don't use those discarded from other rooms, but have plain, easily washable ones of gingham, percale or similar materials. These are suitable and inviting, as well as inexpensive enough to be replaced frequently. If the floor is to be left bare, maple flooring will withstand more wear than oak. Where sanitary, resilient, good wearing floor covering is wanted, cork tile is almost ideal. Inlaid linoleum is a close second. A new way of laying linoleum is to run it up on the wall about six inches all around, covering the upper edge with moulding. This leaves an easily cleanable curve instead of an angle at the floor-line.

3. Size—Even tho you expect to have part of the family meals served in one end of the kitchen, it need not be so large as to waste time and energy in traveling across the room thousands of times in preparing the thousand meals a year. Proper arrangement of all its fixtures is a first consideration in regard to the size, of course, as much more can be accomplished in a small but efficiently planned kitchen than in a much larger one that is not so well arranged. If the family is small, a breakfast alcove, with permanent table and benches, is a great convenience, and is being used in many farmhouses. A folding breakfast table, that can also be used as an extra worktable, and closed up into a wall cabinet between times is an excellent idea, and can be bought ready-made.

Built-in dressers, worktables and wall-cabinet ironing boards economize space in the kitchen. Each must be carefully placed with respect to light—both natural and artificial. The space below all counters, tables and drainboards may be used for bins and sliding panracks, bringing many articles within convenient reaching distance. The space beneath the drain-board might be boxed in, and a garbage receiver placed beneath, accessible thru a hinged opening in the drain board. The garbage receiver can be removed and emptied from the outside of the house. Woodboxes may be fashioned in a similar way, to be filled from outside.

The sink should be under a group of windows. It should be open below for convenient repairing or plumbing, and the back and drainboards should be made without crevices where grease accumulates. One type of sink has a seat which swings out from beneath it, where one may work comfortably seated. Of course, you should see to it that the sink, worktables and dressers have counters of just the right height—which has been standardized at 36 inches.

If you plan to have the dining alcove, pantry, separate refrigerator entry, wash-

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Alloy Steel on the Farm

CHAPTER VIII

Repair Bills Tell Their Own Story

A farmer's bills paid for replacement or repair of the steel parts of automobiles, trucks, implements and tools, form a pretty accurate record of the parts of those machines which should have been made from ALLOY STEEL.

Not that alloy steel cannot give way. That would be an absurd claim. But it stands *more punishment* than ordinary steel.

The Ford automobile is a living example of the strength and endurance of such alloy steels as chrome-vanadium and chrome nickel.

If the vital parts of farm implements were made from the same high-grade alloy steel that Ford uses, the farmers of the world would have less repair bills to pay, less precious hours and days wasted, and less weight to pull over rough ground with horse or gasoline power.

Alloy Steel, as we make it, is pure basic open-hearth steel, to which is added, while in the molten state, certain "alloy" metals like nickel, chromium, vanadium, manganese, molybdenum, tungsten, etc., in carefully calculated proportions.

By adding a small percentage of manganese and chromium to steel for automobile springs, the number of 3-inch deflections the spring withstood in our laboratory tests, increased from 55,000 to 110,000—just double. At the same time, the "ultimate strength," as shown by the testing machine, increased from about 75,000 lbs. to the square inch to 205,000 lbs.

Mention "Interstate Alloy Steel" to your dealer every time you have to buy a new steel part. Tell him to keep agitating the use of alloy steel with the manufacturers of implements, tools, automobiles, trucks—even of wagon springs.

Interstate Iron & Steel Co.
104 South Michigan Avenue
Chicago

room, rear porch, and so on all these reduce the size of the kitchen you need. But have the kitchen as small as you dare. For the farm home, a washroom, where the men may lay aside heavy coats and muddy boots and make themselves presentable before meals without coming into the busy kitchen, is a real necessity. This room should have an outside door, and should also lead to the dining room, or the dining end of the kitchen, without causing the men to pass thru the kitchen proper. The separate refrigerator entry, for those who get ice, is a great economizer, for it keeps the ice-box away from the kitchen heat. Where there isn't an ice-box, the dumb-waiter should be looked after in the kitchen plan. A latticed or screened rear porch is a boon in summer. The pantry is almost a necessity in the farm home, in some shape or other. It is handiest to have it between the kitchen and dining room, for there it shields the front of the house from the noise and odors of the kitchen. One side of it should contain the dressers that hold the chinaware. Here it is handy to either kitchen or dining room. If possible, have an extra sink below the pantry window, and do the dishwashing here, where you can place the dishes in the dressers as you wipe them. These dressers of course have doors. On the other side of the pantry you will want plenty of open shelves for supplies, with bins beneath. In the kitchen proper you will want to provide dressers for the supplies needed in preparing the meal, but in the pantry the bulky reserve supplies may be kept.

4. Arrangement—Many points in connection with efficient arrangement of the kitchen have already been brought out. "Route" the work. Before meals work progresses from refrigerator, mixing table and sink to the range, thence to the dining room; after meals work progresses from the dining room to the worktable, sink and dresser. Fixtures should be arranged in accordance with this routing, eliminating any recrossing of one's path. Prize-winning kitchen plans in contests held by different manufacturers of kitchen cabinets, and by magazines, are worth careful study. Be sure that your kitchen has direct, handy access to the basement, the front door and (if you have them) the downstairs bedroom and bathroom. The stair should be so arranged that the kitchen worker need not pass thru the rest of the house to go upstairs. This is most economically done by having a stair landing that can be reached by a few steps up in the kitchen as well as from the front of the house.

If a hot water boiler must be in the kitchen rather than in the basement, enclose it in a closet for better appearance

and cleanliness. You will want a broom closet for sweeper, table leaves and mop. A clothes chute leading to the laundry in the basement should open in the kitchen, or near it. Plan to have the telephone in the kitchen, or very handy to it.

Many mechanical helps may be added to the kitchen from time to time. The things covered in this article should have a place in every farm kitchen, and most



When Winter Comes We All Appreciate the Canned Fruits and Vegetables.

of them do not represent an expenditure, but the use of a little time and ingenuity, and some boards and nails, in rearranging the present room and its fixtures, cutting in windows and making closets and shelves. The necessary cupboards and worktables can be bought ready-made at the lumber dealer's to much better advantage than they can be made. The use of stock plumbing fixtures and stock woodwork is an important consideration. If you arrange your plan for stock items, you will get better material from the standpoint of looks and efficient arrangement than if you have special items made up to fit some particular fancy or some odd nook or cranny; and you will also save considerable money. It might also be mentioned that in most "stock" plans, obtainable from lumber dealers and others, you will find all the points we have covered have been carefully considered, and perhaps many which you might only learn about after years of inconvenience had suggested the better idea.



WISE mothers when they make daughter's school clothes remember that the girl who is simply dressed is well dressed.



A DELICIOUS apple whip may be made by whipping the whites of two eggs to a stiff froth and adding one cup of sugar and a cup of grated apple.

Tips for the Housewife

ONE housewife takes down the measurements of sweaters before she washes them and dries them on a Turkish towel; then she pins them in shape to conform to the original measurements.

RICE cooked in plenty of boiling salted water and drained as soon as soft is flaky and delicious; much different from the soggy tasteless mess so often served, one housewife says.

A FEW lumps of charcoal placed in the folds of garments when they're put away prevents that musty odor.

ONE cook noted for her doughnuts drops a few whole cloves into the kettle of boiling fat she fries them in.

DISCARDED safety razor blades are fine for ripping and for scraping spots of paint off the window panes.

A FEW nails or a new board in the back steps may mean the difference between comfort next winter and a sprained ankle.

APPLES won't discolor after they're pared if the water they are in contains the juice of half a lemon, one housewife finds.

A DOUBLE boiler or an omelet pan saves heating the oven for warming rolls, biscuits or muffins and for crisping ready cooked cereals and potato chips.

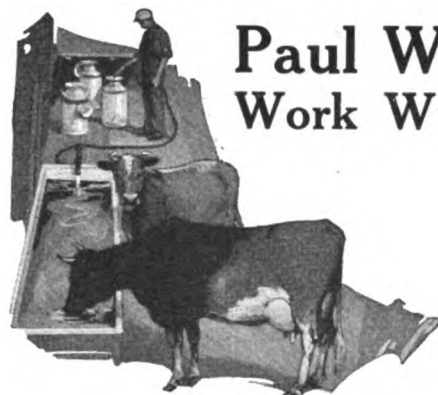
WISE homemakers know that the more a person works the more energy yielding food he needs.

A LOT of things around most houses might be of use to somebody, but their room is worth more than their presence to the present owners.

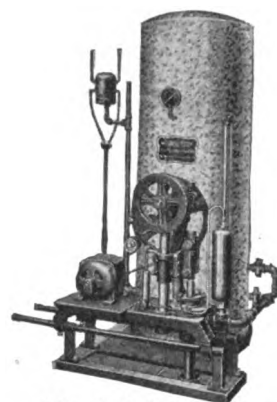
ONE housewife has a chair in her kitchen with one wide arm like those used in "one arm" lunch rooms. She saves her strength by sitting down to a lot of her work.

WASHING dishes in sinks that are too low for comfort—and can't be raised—is made easier by using a wooden rack under the dishpan to lift it to the proper height.

RATHER than trusting to your memory to know what you have put in each jar or can, make labels for all your stores. Then put all of one kind of vegetable or fruit on one shelf and you will always know just where to find what you want.



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THE man who "doesn't care to fuss with machinery" buys a Paul Water System for his home and farm.

Paul Systems are designed for just the kind of service all farm equipment ought to give.

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no matter what the condition of the field—bog—or swamp. The sharp thonged shoes dig deep below the surface and the wheel itself rolls easily over the track thus formed.

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Motor Trouble Advice

By F.M. Service

Ford Overheats

To the Expert:

How does it come that our Ford 1922 model engine heats so much if we drive a stretch of 5 to 10 miles. The water begins to boil and I have to stop and put cold water in it. I have run it about one month and the water boils as much as when I got it. I have changed the oil in it and that doesn't seem to help it. I also tightened the fan belt.

I have been reading your motor trouble advice a long time in FARM MECHANICS and it has taught me a lot about cars.—Elmer Peery, Wellsville, Mo.

Answer—There are several different things that will cause a Ford motor to overheat, such as lack of water, lack of oil, loose fan belt, restricted radiator circulation, spark too far retarded, carbon in motor, too rich a mixture and a dragging transmission band or a slipping clutch. You have apparently checked up the oil, water and fan, and found them all right. To find out if the circulation is all right in the radiator, run the motor until it heats up and then see if the radiator is equally warm all over. If the circulation is retarded due to sediment, etc., the radiator will be found to become extremely hot at the top tank while the lower tank will be comparatively cool. If this condition is found the radiator should be removed and the water jackets of the cylinders thoroly cleaned out. If an excess of carbon is causing the heating, the motor will have a distinct carbon knock when put under a load, such as climbing a hill, etc.

A too rich mixture is apparent by the sluggish or galloping action of the motor at low speed and can be corrected by turning the carburetor needle valve down until the motor hits evenly when idled down. A dragging low speed reverse or brake band will cause the motor to lose power and can be told by the action of the foot pedals as they should have considerable play when pressed down before they start to take hold, and if the bands are dragging, they will start to hold as soon as the pedals are operated slightly.

A slipping clutch will allow the motor to run faster than the car is going and

Mr. Service will answer free of charge for Farm Mechanics readers questions of general interest on Automotive troubles. As a "trouble shooter" he is probably the best equipped man in the industry, having diagnosed the ailments of thousands of automobiles, trucks and tractors. Put your troubles up to F. M. Service—Editor.

especially when the low speed pedal is released into high speed the motor will race for a time before the clutch takes hold. This can be corrected by turning the three adjusting screws in the clutch dogs one half turn each to the right.—F. M. Service.



Ford Truck Motor Pumps Oil

To the Expert:

I own a Ford one-ton truck which is giving me considerable trouble pumping oil on all the cylinders.

Last summer about this time I overhauled the motor and installed a full set of oil sealing piston rings. It worked fine the first 500 to 600 miles, tho the compression was quite weak at first. Now that the compression is extra good it pumps the oil badly. I use heavy oil, have used it ever since I had it. Is that too heavy? Do you think it would be a good idea to drill the piston to stop the oil pumping still using the old rings?

Should the holes be drilled in the top edge or of the bottom ring or in the bottom edge?

Is there any danger of the top part of the piston running dry on oil at the high speed the truck motor runs.

The piston seems to fit pretty closely, tho there is a little play, but not enough to cause piston slap.—Emil Klemme, Postville, Iowa.

Answer—The piston rings that you used when you overhauled your motor are either installed wrong or they do not properly seal the pistons to the cylinder walls. We would recommend that you remove them and fit a set of ordinary word "Ford" that is stamped on one edge of the ring is placed up on the piston edge of the ring is placed upon the piston. If this is not done all the good ef-

fect of the ring is lost, as the surface of each of them is tapered and will ride over the oil on the cylinder wall on the up stroke and will carry the excess oil on the down stroke. If the pistons do not slap and seem to be a fairly good fit they need not be replaced, and to make doubly sure that the oil pumping will be eliminated, the pistons should be drilled. This is done by drilling a series of $\frac{1}{8}$ inch holes at a 45 degree angle to the face or side of the piston, drilling from the top down and should be drilled in the bottom edge of the lower piston ring groove after it has been filed or turned off slightly at a 45 degree angle to the piston wall.

There is no danger of the top piston ring or the piston running dry when this is done, as the small holes only collect and return to the crankcase the excess oil on the cylinder walls.—F. M. Service.



Ford Lacks Power

To the Expert:

I have read with much interest the way you have diagnosed motor troubles of the different readers of FARM MECHANICS. I hope you can help me solve my difficulties.

Some time ago I purchased a 1915 model Ford which was in good running order. I had the misfortune to have a plugged oil line, causing No. 3 cylinder to score badly. I bought another block which had been reground and fitted with a .031 of an inch oversized piston. The job was poorly done, so I had hardly any compression. I then had my old block reground in the scored cylinder and one oversized piston put in.

The car has good compression as three times out of four, but if I climb a hill which I should make easily on high, the engine lugs down causing me to shift into low. It is very difficult to throttle the engine down under 15 miles an hour and have it run at all smoothly. Sometimes while running it seems as if something grabs the rear end, as if the brakes were suddenly applied. At other times, the engine overheats badly while going at a moderate speed.

I have done the following to try to correct these troubles:

Tested strength of magnetos by their power to draw a screw driver.

Spaced the magneto 1/32 of an inch.

Cleaned oil pipe.

Cleaned gas line.

Put in new coils.

Spaced points on spark plugs.

Tried a new timer and carburetor—all without remedying the trouble stated.

Can you please advise me what else to try? Do you think that possibly in putting the engine together the timing gears might have been changed? If so, how could I correct this aside from going by the marks on the teeth? Would it be advisable to have the block rebored that I had reground?—Arthur W. Stone, Oswego, N. Y.

Answer—In the first place when you reground the third cylinder only and fitted a new piston, you threw your motor out of balance, as the new piston would weigh more than the other three, and little as it may seem, it would cause your motor to run unevenly, especially at low speeds. However, the trouble you are having may not be due to this, as your description would indicate that the valves or ignition were at fault. We would suggest that you grind the valves and be sure that the seats are in good shape. If they appear to be rounded or have deep pits in them, have them re-seated. Also be sure and polish the valve stems with emery paper so they cannot stick in their guides. Check over the ignition system thoroly by inspecting the points on the coil units. Be certain they are not badly fitted or burned and that they are 1/32 of an inch apart with plenty of tension on the upper point to bring it away from the lower one. Next remove and take apart all the spark plugs and inspect the porcelain for tiny hairline cracks. If any are found replace the porcelain with a new one. After the plugs are reassembled set the points 1/32 of an inch apart. Take off the timer and if the shell or roller appear to be worn or ridged, put on a new one. If these things are all done and the carburetor adjusted properly, the motor should hit and have plenty of power at all speeds.—F. M. Service.

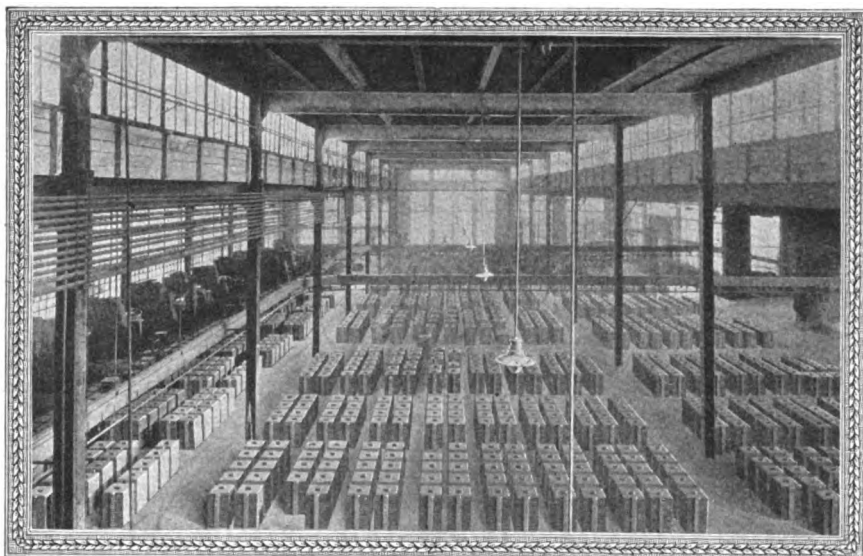


Fordson Sucks Oil

To the Expert:

Why is it that the front cylinders of many Fordson Tractors suck oil? How can this be stopped?—P. H. S., Berea College, Berea, Ky.

Answer—When a Fordson motor pumps oil, it is generally the first cylinder that gives the most trouble. This can be accounted for by the fact that the front cylinder first receives the return flow of oil from the timing gears and the first connecting rod is the one that breaks up the flow and consequently



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FOR over forty years—in fact from the inception of the internal combustion engine, until 1914—no advance was made in piston ring design, which was worthy of the name. In spite of the best efforts of inventors and engineers, to devise a more efficient piston ring than the ordinary, "leaky" diagonal-cut, plain surface piston ring generally used in engineering practice, no satisfactory solution of the problem was found.

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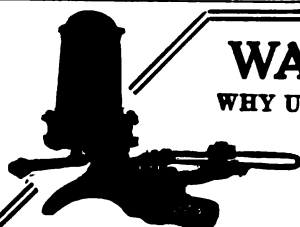
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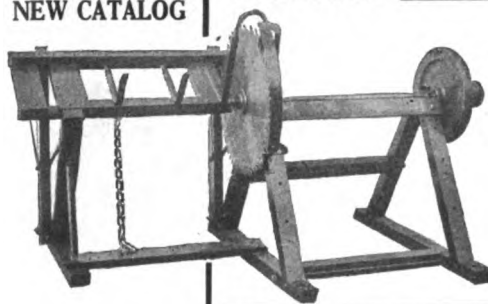
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splashes more oil on the front cylinder and piston than the other three rods do. This trouble can be eliminated by bleeding the piston, which consists of drilling a series of $\frac{1}{8}$ inch holes at a 45 degree angle to the piston wall on the lower grove of each piston. These holes will gather the excess of oil on the upstroke of the piston and return it to the crankcase. Where the oil pumping is not serious it can often be overcome by simply fitting new piston rings.—F. M. Service.



Water Pipes Are Clogged with Lime

To the Expert:

We have a Ford truck and the radiator and also the block is completely clogged with lime caused by using water which contains too much lime. Now this circulation is completely clogged and the truck gets so hot it knocks and will not pull. Kindly tell us what would be the quickest and the most harmless method to remove this lime.—HUNTER LUMBER Co., Sparland, Ill.

Answer—The method that is generally followed when a radiator or cylinder block becomes clogged with lime is to remove them from the machine and boil for several hours in a strong solution of sal-soda, which will eat out the lime deposits. Where the lime has not entirely stopped up the circulation, it is sometimes possible to dissolve the accumulation without taking down the engine, by filling the radiator with this solution of sal-soda and running the motor for several hours and then draining out the cooling system and flushing out with clear water. It may be necessary to do this several times before the cooling passages are entirely free of lime.—F. M. SERVICE.



Magneto Trouble

To the Expert:

Would like your advice on my gas engine which I use to run Empire Milk-ming machine. I have been having trouble with my magneto which is a high tension magneto. Now I would like to know is it possible to connect engine to run from dry batteries in case of emergency while magneto is being fixed? If so, please explain how.

I also have a 1922 Cleveland six car which seems to miss on one cylinder when pulling. I have noticed when it is dark that there is a short circuit in the magneto. It cannot be noticed in the light. Would this cause it to miss?—L. A. Ashton, Festus, Mo.

Answer—It is not possible to connect

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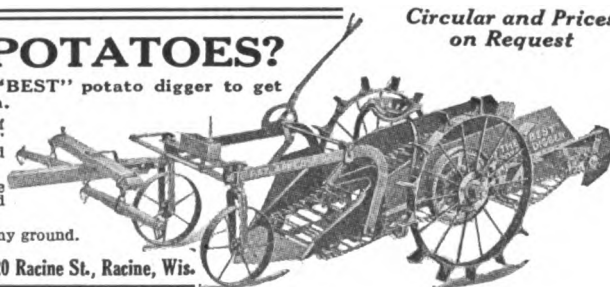
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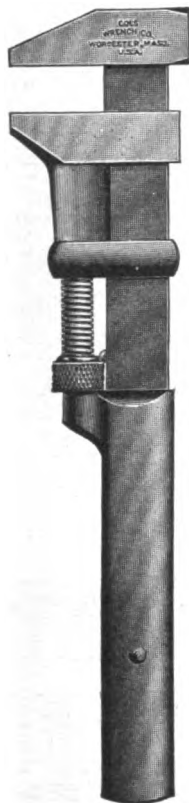
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batteries to operate the ignition on your Empire stationary engine without installing a complete battery ignition system and this would involve a considerable expense.

If the short in the magneto of your Cleveland is so slight that it cannot be seen in the light, it is simply a slight current leakage and would not account for the miss in the motor. You had better look for the trouble in a cracked spark plug porcelain or a sticky exhaust valve, as the trouble will be found to be with one of these and not with the magneto or carburetor.—F. M. Service.



Tractor Gear Breaks

To the Expert:

I have trouble with my Parrett Tractor breaking the large transmission gear which is made of cast iron. The trouble seems to be in the double intermediate gear, a steel gear, mounted on a roller bearing. This manner of mounting seems to allow the gear to wobble. The tractor is a model H 12-25. I am sending you a cut of the transmission with the gears that I have mentioned marked.—R. H. Fyffe, Bloomington, Ind.

Answer—One of three things is causing the trouble with the driving gear breaking on your tractor:

1. The small gear mounted on the roller bearing may have so much play in between the bearings and the sleeves in which the bearing rides as to cause the teeth of the small gear to override or climb the teeth in the big gear. This would cause a tremendous strain on the cast iron gear and would undoubtedly crack it. If the play is found to be at all excessive in this bearing we would advise replacing the bearing and the bearing sleeves.

2. A sprung axle on which the large gear revolves on its bearings would also cause a stress at the sprung point that would cause a fracture of the cast iron wheel, but this can be readily found by jacking up the tractor wheels and revolving the wheels to see if they run true.

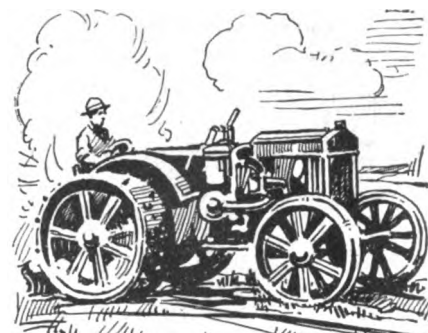
3. The small steel pinion gear shaft may be sprung and cause it to distort the cast iron gear at each of its revolutions. This can be checked up by removing the large wheel and testing the small gear for trueness while it is revolving.—F. M. Service.



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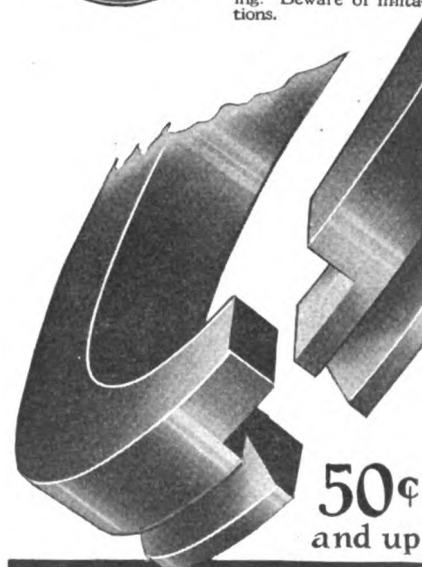
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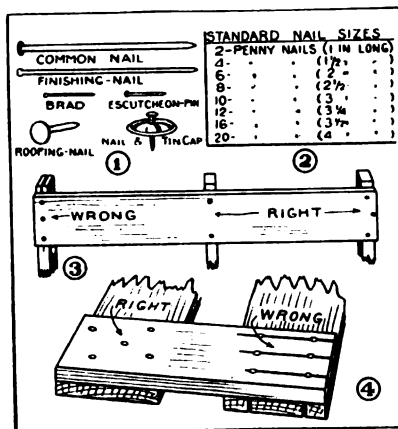
Nails and Nailing

THE subject of nails and nailing is so important that I have decided to devote this entire article to it.

Almost every time you split a piece of wood while nailing, it is the result of one of three conditions—too large a nail, wrong position for the nail, carelessness in driving the nail. The kind and size of nail to use will be determined by the work. In Fig. 1 I have shown the commoner forms, and in Fig. 2 standard nail sizes. In addition to these sizes there are odd-number sizes—3-penny, 5-penny, etc.—these measuring $\frac{1}{4}$ inch longer than the next smaller even number size.

For rough work and large work the large head common nail is used; for fine work where a large nail head would be objectionable, the finishing nail and brad are used.

When you drive several nails thru



a board, bear in mind that each nail acts as a wedge driven between the grain. One nail should simply compress the grain sufficiently to allow room for the nail. Two or more in a row, driven between the same grain, will have a strong tendency to split the wood. Avoid this by staggering the nails so no two drive between the same grain. Figure 3 illustrates the right and wrong way of placing nails. Notice by Fig. 4 that when you nail one board to another you must consider the grain of both pieces, and stagger the nails so rows will not parallel the grain of either piece.

When the nail is longer than the thickness of the work, you can clinch its end by driving thru on to the face of a hatchet (Fig. 5). When clinching it is important to bend the nail lengthwise of the grain, not crosswise, because it will then hammer down flatter, and there will be less danger of splitting the wood (Fig. 6).

When you drive a nail, don't watch your hammer. Rivet your eyes on the nail head, and there will be small chance of your missing a stroke. Hold the hammer so as to strike the nail squarely. If the nail bends, withdraw it, and

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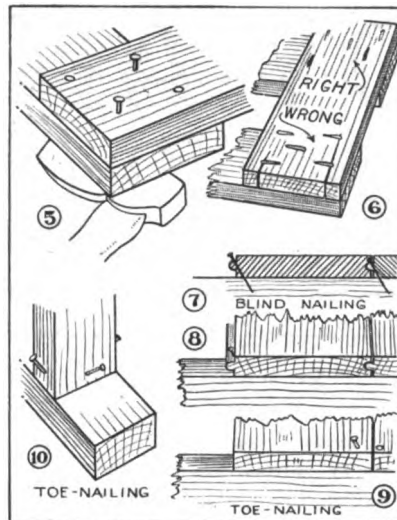
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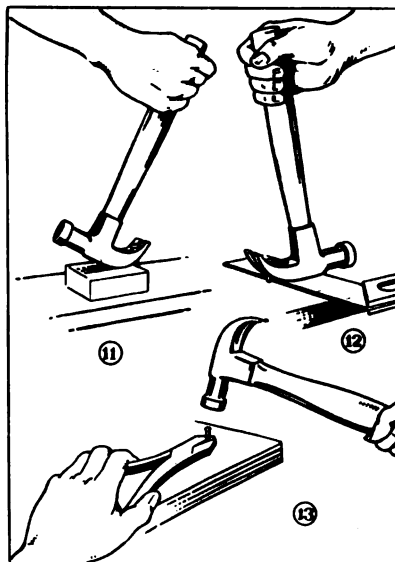
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straighten it or use another. Driving home a bent nail may cause it to break thru the side of the work, or to split the wood.

Toe-nailing (Figs. 9 and 10) should not be attempted until you have learned straight nailing. In the first example, the method is used to drive one board close up to another; and in the second example, it is used because nails cannot be driven thru one piece into the other. Blind-nailing (Figs. 7 and 8) is a form of toe-nailing in which the nail is placed so its head will be concealed by the board placed next to it.

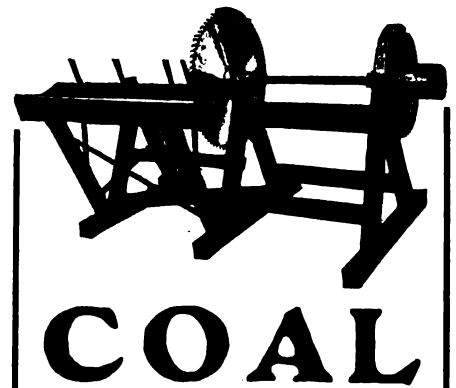
When you have a nail to withdraw,



protect the wood by placing beneath the hammer head the blade of a square, or a block of wood (Figs. 11 and 12). The block will give you greater leverage, besides protecting the wood.

When you drive nails into hard wood, it is best to drill holes for the nails thru the outer piece. Always soap the nails before driving. By supporting small nails with a pair of pincers (Fig. 13) you will find it easier to drive them without bending.

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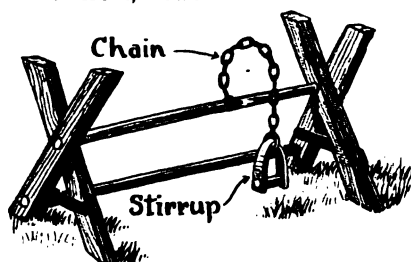
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A Better Saw Horse

SAWING wood with a bucksaw is not an easy job under any conditions, but here is a device that makes it easier, as the knee is not required to hold the wood in place. Instead a chain and stirrup in which one foot is placed holds the piece rigidly in place.

The front, lower cross-bar of the



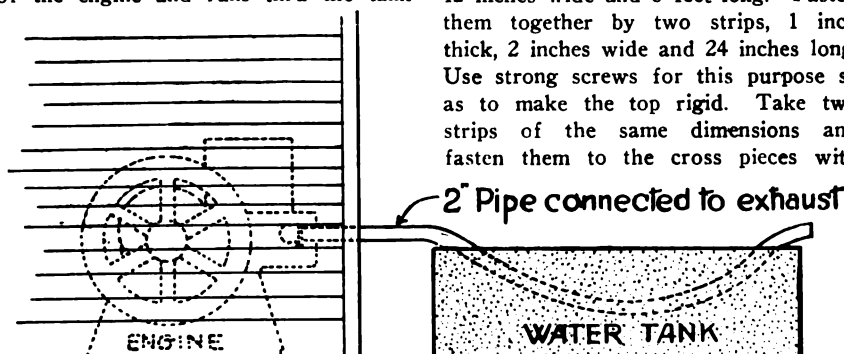
Device That Holds the Log for Sawing.

saw horse is left off, and pieces of strap iron fastened across the end pieces to hold them from spreading. A light chain is fastened to the middle bar and is brought over the log to be sawed. This is tightened by the operator's foot placed in the stirrup and pressure holds the wood tightly. The chain can be adjusted to suit any size log or piece of wood.—WALTER MOORE, Dahinda, Ill.



Exhaust Heats Water Tank

HERE is a method of heating the outdoor water tank in the winter which is used on a stock farm with great success. This farm employs a 4-horsepower gas engine to run the milking machine. Outside the building is a concrete water tank. A 2-inch pipe has been attached to the exhaust pipe of the engine and runs thru the tank



Exhaust from Engine Run Thru the Water Tank Keeps the Water from Freezing.

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HANDY ANDY,
Care Farm Mechanics,
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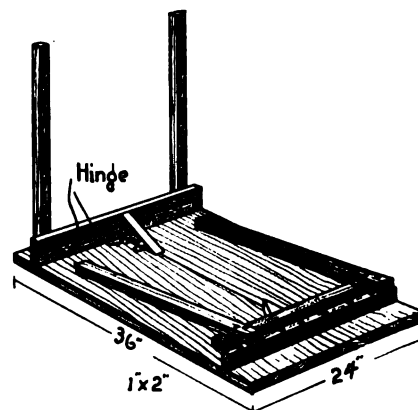


Folding Card Table

A FOLDING table, commonly called a "card table," is a handy piece of furniture to have about the house. Not only is it useful for card games, or any other game that it may be desired to play, but it is useful for sewing, for luncheons and at other times. Such a table is simple to make.

For the top use two planed boards 12 inches wide and 3 feet long. Fasten them together by two strips, 1 inch thick, 2 inches wide and 24 inches long. Use strong screws for this purpose so as to make the top rigid. Take two strips of the same dimensions and fasten them to the cross pieces with

hinges, as shown in the illustration. Use triangular shaped pieces to hold the legs in place while the table is used and fasten them with hinges, as illus-



Folding Table That Comes in Handy for a Variety of Purposes.

trated. When completed the legs may be put in position and will be held there by the braces. It is a simple matter to fold the table, so that it may be put away in a closet, where it will not take up much room.

This same plan may be used in making a larger or smaller table by utilizing wide boards for the top and the other pieces of the correct dimensions.—JOHN A. BARNHARDT, China Grove, N. C.



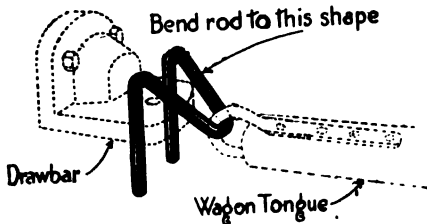
Wagon Hitch to Fordson

WE have a Fordson tractor and were handicapped for the proper arrangement to make a hurry-up connection with wagon tongues and other vehicle poles having a vertical loop. The drawbar of the tractor has three holes also in a vertical position. Our first means was a combination of two clevises which did not permit the backing of the the drawn vehicle with any degree of success. Here is our solution of the difficulty:

We used a pitman bar from an old mowing machine, but any round bar may be bent into the shape shown in the illustration by heating at the forge. The clevis can be turned so that it will go thru the vertical loop on the wagon pole, and then dropped into the two outside holes of the tractor drawbar. You can back up, check your load down on an incline without any lost motion,

turn short, etc., when using this clevis. To unhook, stop from a slow pace to relieve the binding strain and from the tractor seat reach down and raise the clevis out of the holes, detach it from the wagon tongue and drop it back into the drawbar holes and you are ready for the next vehicle.

During haying time we use this device



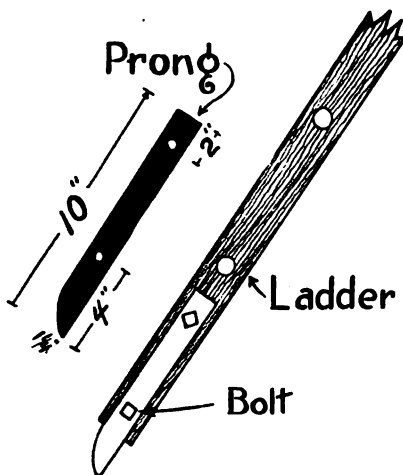
Coupling for Fordson and Wagon.

and the tractor to haul the hay loader, while horses haul the loaded wagons to the barns and the clevis is a great time saver while backing off the loader and getting the next wagon in place. We draw a road scraper, a manure spreader, roller and drag combination and other machines by using this, which we call the "instant clevis."—MARK C. MORSE, Carson City, Mich.



Hold Ladder in Place

FEAR that the legs of a ladder will slip makes working at the top of one a task that no one likes. Here is a method of equipping the legs of a ladder so that it will not slip, or at least will not do so easily. The prongs on the ends of the ladder legs are made of pieces of iron 10 inches long, 1 1/4 inches wide and 1/4-inch thick. They are pointed and bent slightly as shown in the illustration. Two 3/8-inch holes are spaced 2 inches from the top and 4 inches from the bottom. The prongs are then bolted to the ladder.—HAROLD ROERKHOHL, Caledonia, Minn.



Prongs Keep the Ladder from Slipping.



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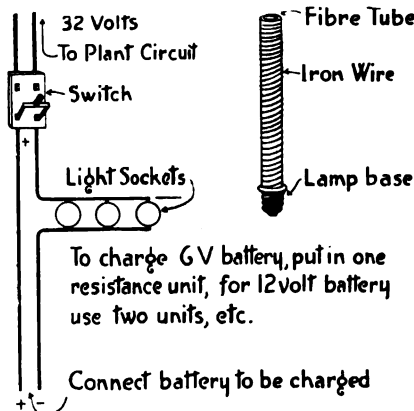
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Battery Charging Unit

NOW that a great many farmers have electric light plants, it is often very desirable to charge the automobile or tractor battery from it. It may be done by following a simple method, shown in the illustration. All that is necessary is to put in series with the battery and the light plant circuit a resistance of a certain value, depending on the voltage of the battery. For charging an automobile battery, which is usually 6 volts, a resistance of 2 ohms is required in the circuit. This can be made by winding iron wire around a fibre tube. A piece



Battery Charging Outfit.

of No. 20 B&S gauge wire 25 feet long has a resistance of about 2 ohms. If this tube is mounted on an old lamp base as shown it makes a handy unit. For charging larger size batteries, 12 or 18 volts, another unit of resistance or two is required, as the case may be. The illustration shows how the resistance coils are mounted and the battery and electric light circuit connected.—O. T. McILVANE, West Lafayette, Ind.



Platform for Ford Roadster

VERY often it is desired to haul more bulky loads than can be easily stowed away in the rumble deck of a Ford roadster. With this in view a removable deck or platform can be built of 1 by 4-inch boards that will haul a large load without damage to the paint and finish of the car, and at the same time does not necessitate the removal of the body or parts of the car. The platform being removable allows the owner to quickly take it off when not needed, or to make use of it when desired.

The platform consists of a pair of sills mounted on four short legs to be set in the opening of the deck cover, and to rest on the floor boards. The rear ends of the sills are arranged by means of cross members over the spare

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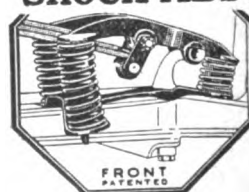
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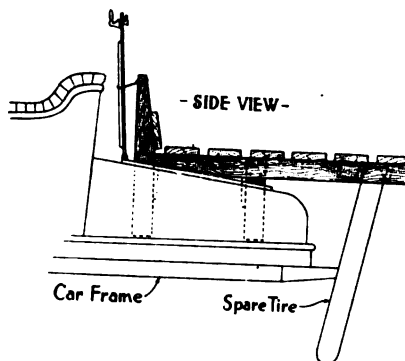
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WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

tire in such a way as to form a trough, thus preventing shifting and movement of the platform on rough roads.

The deck is made by nailing boards

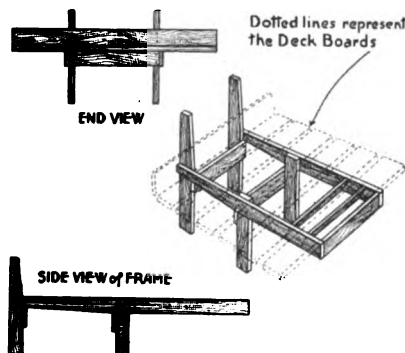


View of Platform for Ford Roadster.

crossways on the sills. Two stakes are provided at the front end by extending the short supporting legs. To these stakes the door of the rumble deck can be tied to prevent chafing of the back curtain. Common eight-penny nails suffice to hold the parts together.

No dimensions have been given because of the difference in the mounting of the spare tire, and of the size of opening in the deck covers of the various models of roadsters.

Such a platform takes little room. It



Details of Platform to Go on Back of Ford.

is not high from the ground thus permitting hauling large boxes, rolls of wire and the many other things to be transported on the farm.—RALPH A. SCOTT, Sterling, Ill.

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Diseases Play Havoc in Many Swine Herds

INFECTIONOUS swine diseases, parasites and various other troubles are making it increasingly difficult for the Kentucky farmer to produce pork at a profit, according to reports being received by the veterinary department of the Kentucky Agricultural Experiment Station from all over the state. Cholera, abortion, bowel troubles and intestinal parasites have been on the increase and given considerable trouble during the last few months, the reports indicate.

"Hogs should be vaccinated with both the serum and virus in all cases where symptoms and lesions indicate that the disease may be cholera," Dr. W. W. Dimock, head of the department, said. "In early stages, many diseased conditions of swine show symptoms that are common to cholera. If the owner waits for three or four days to make sure of the symptoms, a number of pigs may become infected and die, provided the disease is cholera. Even though the disease is not cholera the cost of vaccination is not lost for the owner has an immune herd once he has vaccinated."

Alfalfa Seed Is Now on Badger Crop List

PROSPECTS for a record crop of alfalfa seed in Wisconsin this year are very bright.

R. A. Moore, secretary of the Wisconsin agricultural experiment association, reports that one member of the organization has 40 acres of alfalfa that shows prospects of a high yield. The entire field will be held for seed purposes.

Many other Badger farmers have reported their alfalfa fields as setting seed.

Fond du Lac County was the leading section of the state last year and harvested no less than 1,500 bushels of alfalfa seed from fields yielding as high as 5 bushels to the acre. Fond du Lac's contribution amounted to more than half of the entire alfalfa seed crop of the state—reported at 2,500 bushels.

Moore estimates that 50,000 acres were seeded to alfalfa this year. It is estimated that Badger farmers used at least 16,000 bushels of seed, the greatest share of which came from the western states.

"There is no reason why Wisconsin cannot be one of the leading alfalfa growing sections of the country," says Moore. "She is one of the largest clover growing states in the Union and has all the facilities at hand to duplicate this performance with alfalfa."



New Strain of Corn to Foil Jack Frost

NEARLY 12,000 acres of cold resistant corn in Wisconsin!

This is the estimate of R. A. Moore, agronomist at the College of Agriculture, after making an inspection trip in the northern part of the state.

"This is a great year for the new cold resistant corn," says Moore. "The new strain has made fine growth and is in many cases taller than the native varieties."

"The cold season is proving the worth of cold resistant seed. A June frost failed to affect the new corn. A few leaves sloughed off, and then the growth continued normal. There should be a great demand for seed this fall, and there should be a great quantity of seed for distribution."

Brown, Marinette, Oconto, Forest, Vilas, Florence, Shawano, Marathon, and Langlade counties are leading in the production of cold resistant this year. Farmers in Wisconsin valley counties are giving it a trial this season. Another locality where this variety will be grown extensively is on the Lake Michigan shore especially in Manitowoc, Kewaunee, and Door counties.

Cold resistant is the result of several years of selection by B. D. Leith of the agronomy department of the University

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NOTICE TO ADVERTISERS

Forms for the November number of Farm Mechanics will close promptly October 15. New Copy, changes and orders for omissions of advertisements must reach our business office, 1227 Prairie Ave., Chicago, not later than the above date. If new copy is not received by the 15th of the month preceding date of publication the publishers reserve the right to repeat last advertisement on all unexpired contracts

FARM MECHANICS.

of Wisconsin, and is in its third season as a Badger state crop.

This new variety can be planted earlier in the spring, grows a much larger stalk, and matures slightly earlier than Golden Glow. It is an excellent silage crop and is now being grown largely as such, the great quantities are also being grown for seed.

Last year over 3,000 bushels of cold resistant seed were disseminated. At least 2,000 bushels went to Badger farmers, and the rest went largely to Dakota and Minnesota farmers.



A WOODEN rack on the wall or in the kitchen drawer keeps paring knives apart and saves their edges.



ONE housewife gave her old grass rugs a coat of shellac and now she leaves them on the porch even when it rains.

ONE worn-out sheepskin coat furnished the material for a pair of wool mittens, one to apply furniture polish and the other to rub it glossy.



NEXT time you lack cream for coffee, heat some milk to the boiling point, put it in the bottom of the coffee cups, and pour the coffee on it slowly.



WHY not fasten the ironing board to the wall with a pair of hinges? Use hinges also to attach a leg to the free end of the board, which can then easily be folded up out of the way.



TRY putting juice from grapefruit or oranges into the boiled dressing for fruit salad—it's fine.



THE health fairy doesn't live in a tea or coffee cup, but little folks can see one in the bottom of a glass of milk.

Build For Permanence at Less Cost—

A Permanent Products 100-Year Concrete Crib will protect your grain from rats, rot, mold, fire, rain, and costs less than wood.

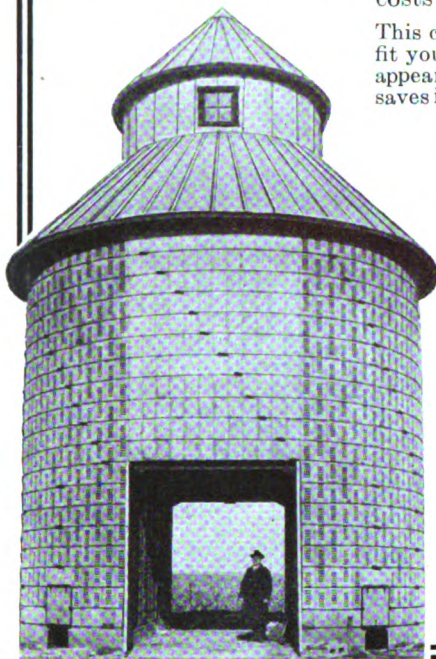
This crib ever continues to benefit your grain, ever improves the appearance of your farm, and saves in upkeep, paint and repairs.

Our patented concrete wall increases the ventilation and sheds rain and snow—the only one with these features. Our heavy steel frame-work as well as galvanized rods make ours the strongest possible construction. Perfect air circulation and protection insure better grading in market.

Investigate the **Permanent Products 100-Year Fence Posts**—the only permanent posts into which you can drive staples. We will rent or sell mould equipment.

PERMANENT PRODUCTS CO.

15th Floor, Marquette Building
CHICAGO ILLINOIS



PATENTED



PATENTED

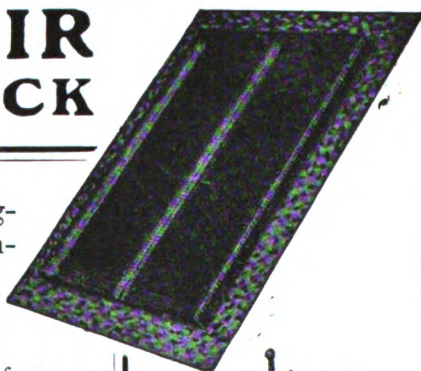
FRESH - AIR for YOUR STOCK

is a very direct factor in bringing better returns to you. Install Willis Ventilators this year and find what other satisfied owners have known. Your stock will be healthier, fatter and require less care.

Willis Ventilators keep out rain, snow and sleet but always maintain a flow of fresh, clean air.

If you are not using Willis Ventilators, get in touch with us today. It will mean money to you.

WILLIS MANUFACTURING CO.
GALESBURG, ILL.



WILLIS

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS



Wanted to be There

The great banker lay on his deathbed. Many of his friends were gathered about his bedside to be with him at the last. The attending physician whispered to the group: "I fear he is nearing the great divide."

"Tell them not to divide until I get there," whispered the dying banker.—*Forbes Magazine.*



Exit the Speedometer

The city motorist was indignant.

"How do you know if I was exceeding the speed limit when you haven't a watch or anything?" he demanded.

"Wal, ye seen that yaller dog a-chasing ye, didn't ye?" inquired Constable Slackputter amicably. "When that dog can't keep up with a feller, the feller's a-goin' more'n thutty miles an hour."



Six and Half a Dozen

In a land where the only wells are artesian, the middle of America's most arid belt, an Eastern traveler once met a farmer hauling a wagon load of water.

"Where do you get the water?" asked the tourist.

"Up the road 'bout seven miles."

"What! You haul water seven miles for your family and stock,"

"Yup."

"Why in the name of common sense don't you dig a well?"

"Heck," snorted the farmer. "What's the use? It's just as fur one way as 'tis 'tother."



Fifty-Fifty

"Do you claim to know all about finance?"

"No," admitted Farmer Cornassel, "I'm free to confess some of us farmers who talk about finance don't know any more about the subject than some of the financiers who talk about farming."—*Washington Star.*



Almost Marketable

"I tested that dozen eggs you sold me and only five were bad," said the grocer sarcastically.

"Well," yawned the wise old farmer, coming back with just as much sarcasm, "all ye had to do was add a couple more bad ones and sell 'em for 'strictly fresh.'"


PUBLICATION
OFFICES
CHICAGO, ILLINOIS

FARM

NOVEMBER
1922
PRICE 20 CENTS
PER COPY

MECHANICS

TITLE REGISTERED, U. S. PATENT OFFICE



KOHLER
AUTOMATIC
POWER & LIGHT

Kohler Automatic owners can take advantage of every new application of electrical economy and efficiency to modern farming. They enjoy electricity at its best—1500 watts of 110-volt current without storage battery limitations, automatically available anywhere and any time. *Write for Booklet No. 83.*

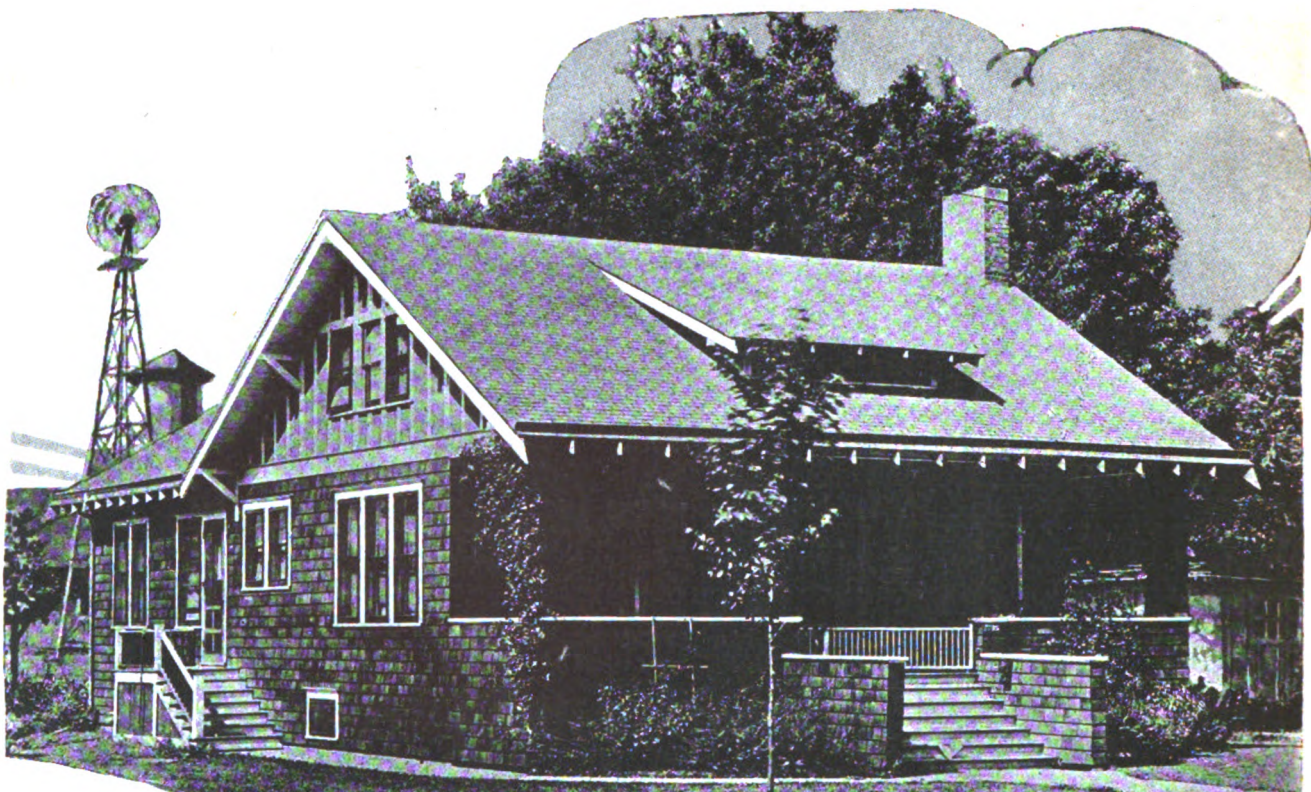
KOHLER OF KOHLER

Kohler Co.

Founded 1873

Kohler, Wisconsin

Digitized by Google



Let us draw the plans for you

THIS farm home is a good example of what you can do at a reasonable cost by careful planning. A big, roomy porch, a handy kitchen and special emphasis on all the details that make a comfortable farm home.

We can furnish you at a very reasonable price, the complete working plans and specifications for this home or any other building you may be considering such as barns, granaries, hog houses, garages, sales pavilions, farm residences, etc.

Send Us a Rough Sketch and We Will Prepare Complete Working Plans

Your own ideas will be followed,—but, by our expert draftsmen who will put into the plans all the latest and best approved features.

We are interested in your plans: and our years of experience and study in the farm building field have given us a knowledge of what has proven best in farm building construction.

The price and quality of our work are bound to satisfy you. Write today.

Radford

ARCHITECTURAL CO.
1827 PRAIRIE AVE. CHICAGO



Ask your Lumber Dealer
About Radford's Farm
Building Plans

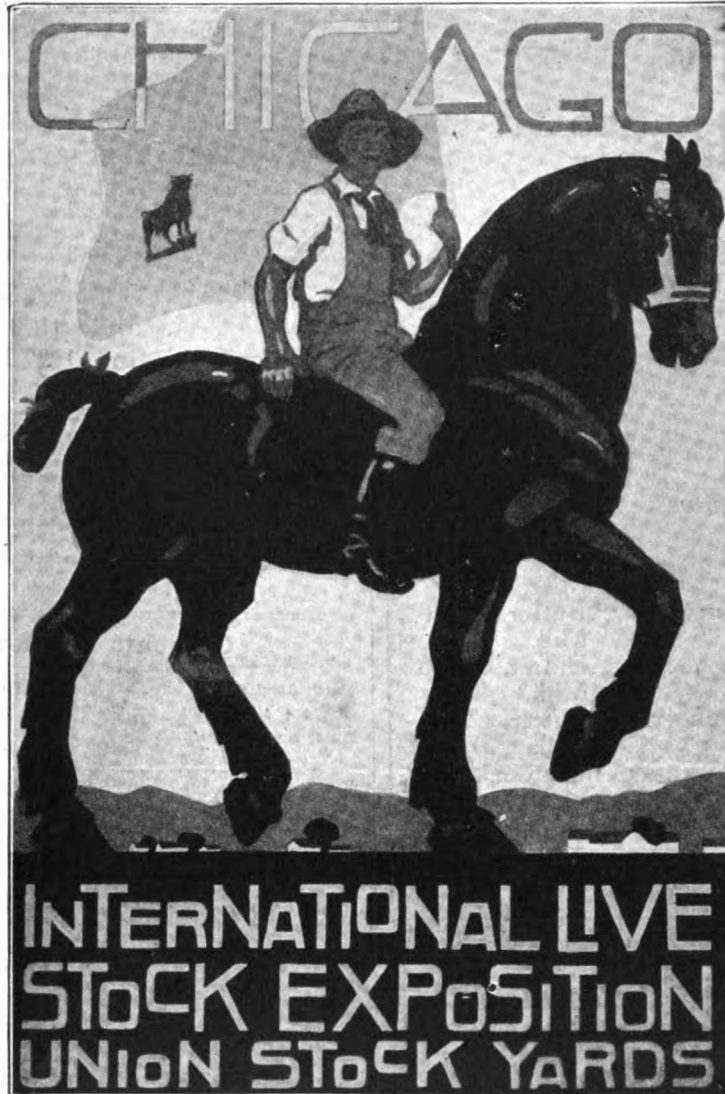


We Plan for
Convenience

Visit the INTERNATIONAL LIVE STOCK EXPOSITION

December 2 to 9

Union Stock Yards, CHICAGO



*Make the
Farm Mechanics
Booth
Your Headquarters*

*You'll be Welcome
at the
Farm Mechanics
Exhibit*

**Supreme Court of the Pure-Bred Live Stock Industry
Round-Up of the Master Breeders and Feeders of the Continent**

See the Aristocracy of the Animal Kingdom.

Learn Economy in Production.

Enjoy the Great Spectacular Features.

Profit by Investing in a Trip to

THE WORLD'S GREATEST LIVE STOCK SHOW.

DAILY PURE-BRED SALES:

ABERDEEN-ANGUS SALE
Wednesday, Dec. 6th, 1 P. M.

SHORTHORN SALE
Thursday, Dec. 7th, 1 P. M.

BERKSHIRE SALE, Wednesday, Dec. 6th, 1 P. M.
Pure-Bred Live Stock Sales

MILKING SHORTHORN SALE
Friday, Dec. 8th, 10 A. M.

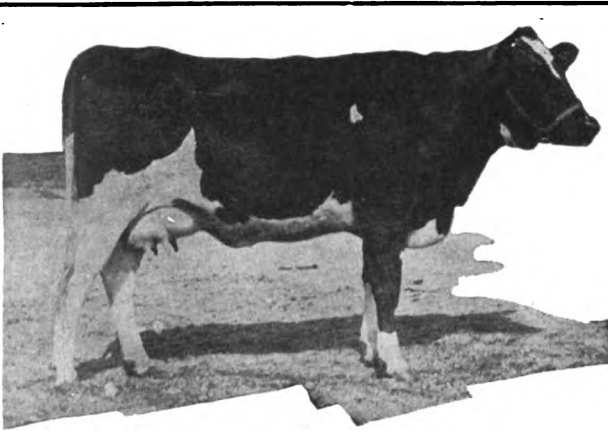
HEREFORD SALE
Friday, Dec. 8th, 1 P. M.

*Ask
R. R. Agent
about
Reduced
Fares*

See the
INTERNATIONAL GRAIN and HAY SHOW
For Chicago Board of Trade Premiums

A Season of Education, Pleasure and a TRIP TO CHICAGO

**—FARM MECHANICS
WILL BE THERE!**



Pabst Eglantine 3d

Daughter of Creator

Butter, 7 days, at 2 yrs. 2 mo. 23.52 lbs.
Milk, " " " 361.8 lbs.

Creator has 8 daughters fresh, all of which have made better than 20 lbs. of butter in 7 days as two-year olds.

Look this list over carefully lbs.

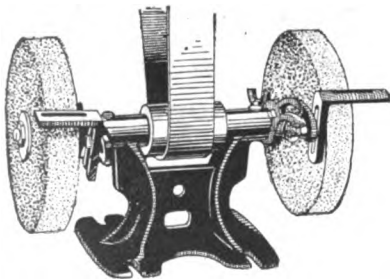
PABST VERNON QUEEN 2D Butter, 24.01
Milk, 466.9
PABST EGLANTINE 3D Butter, 23.52
Milk, 361.8
PABST CREATOR VIRGINIA ROSE. Butter, 22.50
Milk, 430.7
PABST CREATOR ACANTHUS Butter, 22.90
Milk, 441.1
PABST KINNICKINNIC 2D Butter, 21.41
Milk, 455.7
PABST VIRGINIA JOHANNA 2D Butter, 20.30
Milk, 427.1
PABST MARIGOLD 3D Butter, 20.06
Milk, 469.8
PABST GEM BELLE PRIDE 4TH. Butter, 20.12
Milk, 375.3

Buy a son of Creator—a brother to these wonderful heifers that are going so strong on year test.

Under Federal Supervision. Last Test 100% Clean

Pabst Stock Farm, Oconomowoc, Wis.
Waukesha County

Special Power Grinder For Farm or Shop



(No. 306)

Retails for
Only

\$7

A very substantial LUTHER power grinder for general utility work. Two 6x1 1/4 inch DIMO-GRIT wheels, two adjustable work rests. Retails for less than wheels alone are worth!

If your dealer can't supply you, we will send one No. 306 prepaid upon receipt of \$7.

Address Desk F

LUTHER GRINDER MANUFACTURING CO.
MILWAUKEE, WISCONSIN

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FARM MECHANICS

MONTHLY FARM MAGAZINE ON TRACTORS
FARM MACHINERY, BUILDING IMPROVEMENTS AND
MODERN AGRICULTURE

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The New Idea Spreader Co.
Coldwater, Ohio

Gentlemen:
Please send me more facts on your new low-priced
B-3 model New Idea.

Name.....

Address.....

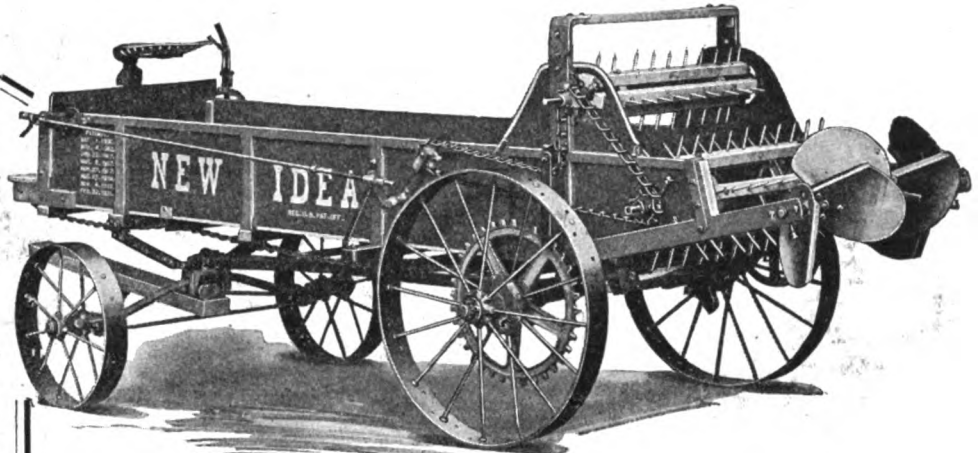
Before You Spread Another Load of Manure—*Mail this Coupon!*

Actually Does Better Work

The New Idea Spreader pulverizes perfectly. It beats and shreds every scrap into fine particles and spreads its load lightly in a thin, even blanket, seven feet wide. No bare spots—no spots too heavily manured.

The New Idea is the *original* wide-spreading spreader. It is light draft, easy to load and built for years of service. It is strong, sturdy, always on the job. It saves time, energy, work—and gives you the last bit of soil-building value that lies in the manure.

The New Idea is the *safe* spreader to buy—the product of “Spreader Specialists”—a standard implement of known quality.



BEFORE you do another bit of repair work on that old spreader of yours—why not sit down and give this spreader question serious thought?

Haven't you used your old spreader one season too long already? Aren't you really wasting valuable time patching it up to haul “just one more load” when you can buy a new spreader—a B-3 New Idea—at a remarkable, new low price that will very soon make it pay for itself?

The B-3 is a new model. It is a standard New Idea outfit. That fact alone insures quality. For the name NEW IDEA has come to stand for all that is good and honest and efficient in the spreader field. Wide spread, light draft, perfect shredding—these are the qualities that put the “Original Wide Spreading Spreader” in a class by itself.

It is built to spread manure better and more scientifically; to last longer and haul easier; to give you the utmost spreader satisfaction. It will pay you big to investigate this new model B-3 New Idea Spreader. It sells at a new low price that will astonish you! *Use the coupon above.*

NEW IDEA

Original Wide Spreading Spreader

“New Idea” and “Nisco”—two trademarks representing spreaders that are identical in quality, principle, in design and mechanism, except for some minor differences in running gear which adapt them to varying field conditions in different parts of the country.

NISCO

Original Wide Spreading Spreader

The New Idea Spreader Company

“Spreader Specialists”

COLDWATER

OHIO

NEW IDEA
Registered U.S. Pat. Off.

The Original Wide Spreading Spreader



CARROT FACE. Odd shapes are not unusual in vegetables, but the photographer vouches that nature produced this carrot without the aid of human hands. Maybe so! Maybe so!

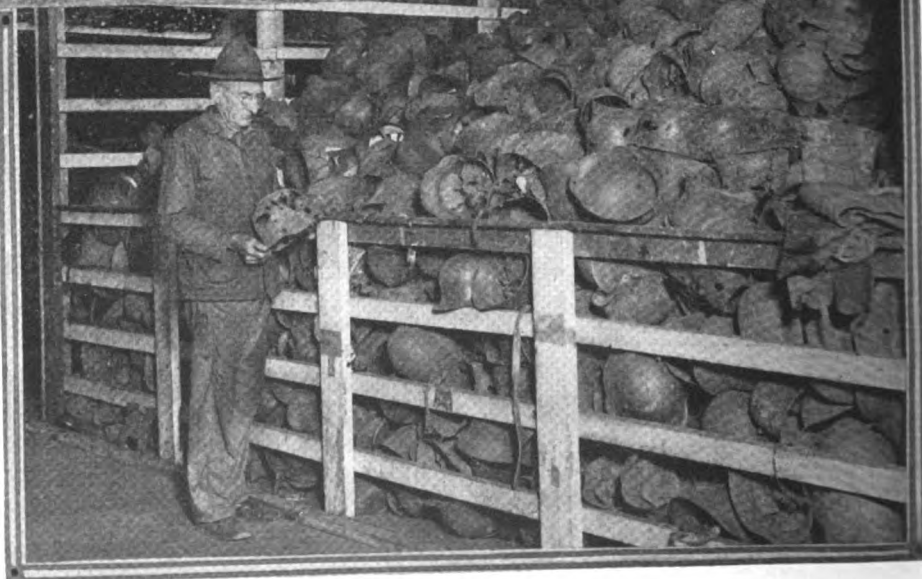
GATHERING THE CROP. The New York Agricultural Institute at Farmingdale, L. I., enrolled several hundred young students in agriculture this summer and under the direction of experts were given practical experience in producing all sorts of crops.



THE BURNING OF SMYRNA. The burning of Smyrna and the destruction of thousands of Greeks created a crisis in Near Eastern affairs. This picture of the burning city was taken by an American aboard ship off the city and shows in a remarkable way the extent of the fire.

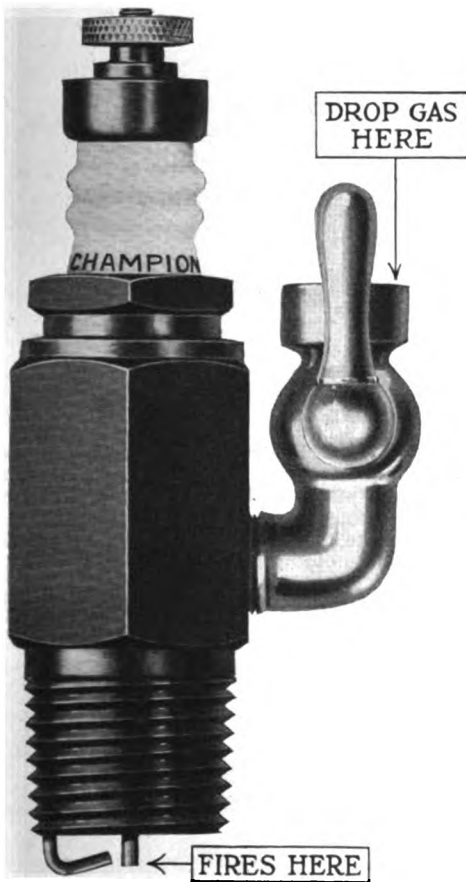


WAR TROPHIES. The United States Army warehouses, at Newark Bay, N. J., hold millions of trophies of the war, enough so that souvenir seekers the country over can be supplied. The trophies range from small trench knives to heavy artillery and eventually will be distributed thruout the country. The picture shows one of the bins of helmets, the one in the hands of the officer showing how some of them were riddled with bullets.





Dependable **Champion** PRIMING PLUGS



Price \$1.00
Sizes $\frac{1}{2}$ and $\frac{3}{8}$ inches

are Time and Battery Savers.

They are a necessity for cars not equipped with priming cups and a decided advantage for cars with ordinary priming cups which deliver the gasoline too far from the spark plug.

With these plugs, starting a cold motor is positive because the gasoline must go right where the spark is—at the firing point—and less gas is needed.

An actual necessity on the Farm for Stationary Engines, Pumps, etc.

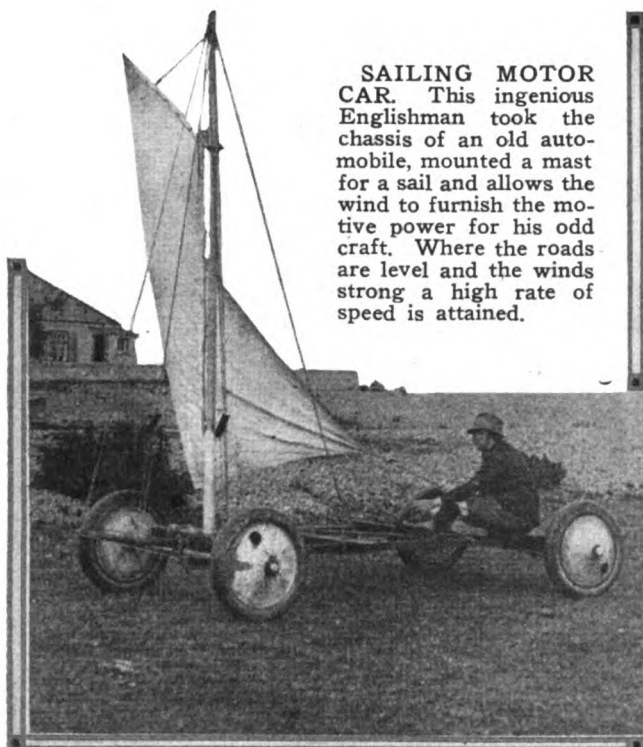
Sudden changes in temperature, damp or cold weather will cause you no delay after you have your engine equipped with

CHAMPION PRIMING PLUGS

NEARLY A MILLION IN USE GIVING SATISFACTORY SERVICE

Ask your Dealer to sell you a full set

CHAMPION SPARK PLUG CO., Toledo, Ohio



SAILING MOTOR CAR. This ingenious Englishman took the chassis of an old automobile, mounted a mast for a sail and allows the wind to furnish the motive power for his odd craft. Where the roads are level and the winds strong a high rate of speed is attained.



KEEPING THE BABY SAFE. Chinese mothers have a lot of work to do, so use this novel method of cooping up the babies, where they know they will be safe. The cone-shaped device is made of straw, with a wide bottom so that it will not tip over. Inside there is a seat so that the baby may see what is doing on about him, thus keeping him interested and contented.



COTTON PICKING TIME. A bumper crop of cotton compared with that of a year ago has been harvested in the cotton growing states and needless to say the negro boys have been helping garner it. Herewith is a study in black and white; note the contrast between the hands and the cotton they are holding.



A STITCH IN TIME. Thousands of Irish orphan boys, who lost their parents and homes during the rebellion, are being taken care of by the government. Many of them will be sent to Australia for adoption. The picture shows a group in the Church Army Hotel doing some necessary repairs to the clothing of one of them.

COMPLETE Tresco \$50 DOWN Long Distance \$20.00 PER MONTH Radio Receiving Set

Made Under Armstrong License

HERE, at last, is your opportunity to secure on easy terms, the best Radio Receiving Outfit ever built—the TRESKO Regenerative Set, built under Armstrong license.

With it you can bring the world to your door by the turn of some knobs, any hour, day or night. Crop, market and weather reports; stock-market quotations and other business information by day, and concerts, lectures, solos by famous performers by night. And the children are not forgotten, for many stations broadcast wonderful bed-time stories at 7:30 every evening. And on Sundays sermons by noted pulpit orators.

The price is \$150.00, express prepaid to any part of the United States. You pay \$50.00 down and \$20.00 per month for five months. Enjoy it while you are paying for it. And, like as not, the market information it gives you will make it pay for itself many times over.



No investment you can make will do more to keep the young people at home and happy. With the Loudspeaker horn attachment listed below, they can give little neighborhood dancing parties, to music radioed from some famous orchestra in a distant city. And between dances, entertain their guests with the selections of great opera singers or other high-priced city talent—without cost.

Give your family a Christmas present of this wonderful Radio Set. Fill out the coupon; send it in with \$50.00 and outfit will be shipped at once. Phone any banker or business man owning the

Dun or Bradstreet service as to our responsibility. Set is absolutely guaranteed.

Here in Chicago, this same "Tresco" set brings in Schenectady and New York City, Pittsburgh, Detroit, Atlanta, Kansas City, Denver and all stations in between. So you can judge by these distances the stations that you will be able to reach.

THE SET INCLUDES

Set is complete—everything you need; to the last screw or piece of wire. You don't have to shop around for parts. It includes:

Tresco Tuner and Detector unit shown at the left of the picture complete with Radiotron tube.

Tresco Two-Step Amplifier unit, shown at the right of the picture, complete with two Radiotron tubes.

Pyramid "A" Battery, 6 volts, 60 amperes.

Burgess "B" Batteries—22½ and 45 volt.

Dictograph Head Phone.

Complete antenna and wiring equipment with 100 ft. of wire.

Brach Lightning Arrester, insulators and connections.

OPTIONAL EXTRAS

A third unit, shown in the center of the picture for holding the "A" Battery, \$12.50.

Dictograph Loudspeaker and Horn illustrated above, enabling you to entertain dozens or hundreds of people all at once. Sold with the set for one extra monthly payment, \$20.00.

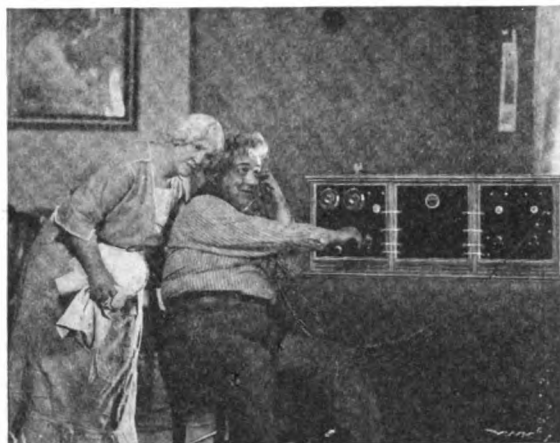
Extra head phones, each \$3.00.

Circulars on request

Mitchell Blair Co.

1429 South Michigan Ave.,

CHICAGO



"CORN IS UP A CENT!"

Chaslyn Ball Battery Tester

For automobile and radio acid storage batteries. In the glass barrel are three balls of different weights and colors. Condition of charge or acid is shown by the manner in which the balls sink or swim in the acid, which you draw out of the battery cell. These rhymes tell the story:

*"Float all three—charged fully.
Sinks the white—charge still right.
Sinks the green—charge is lean.
Sinks the red—charge is dead."*

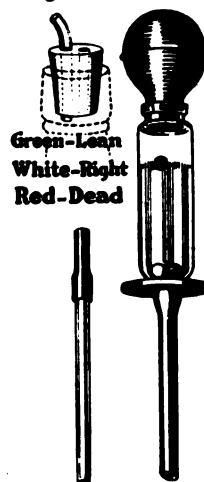
More accurate than graduated scale hydrometer and ten times as easy to read. And you can read it without lifting it out of the battery cell. No more acid-burnt carpets, rugs or clothing.

Set also includes:

Depth gauge, to show depth of acid over the plate.

Air-controlled rubber stopper for distilled water bottle, making it easy to "water" the battery.

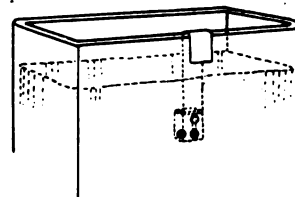
Price of complete set, postpaid—\$1.00.



Ball Tester for Farm Lighting Batteries

Instead of fussing with a complicated hydrometer hang a Chaslyn "See-Thru" Hydrometer in each cell and leave it there. You can then see the condition of the acid in any cell at a glance by looking through the glass and noting how the balls sink or swim.

Price, including balls, postpaid 35c each or \$3.50 per dozen.



MITCHELL BLAIR COMPANY,
1429 S. Michigan Ave.,
Chicago, Ill.

Please ship me by express prepaid; the complete Tresco Receiving Set, described in the November, 1922, issue of Farm Mechanics. I enclose for \$50.00 and agree to pay \$20.00 per month for months, until the full purchase price of \$ is paid, set to remain your property until fully paid for.

References	Address	Name
1. ....	.....	.....
2. ....	.....	.....
3.	Address .....	.....

Prices: Without Loudspeaker Horn—\$150.00, payable \$50.00 down, with five monthly payments of \$20.00.

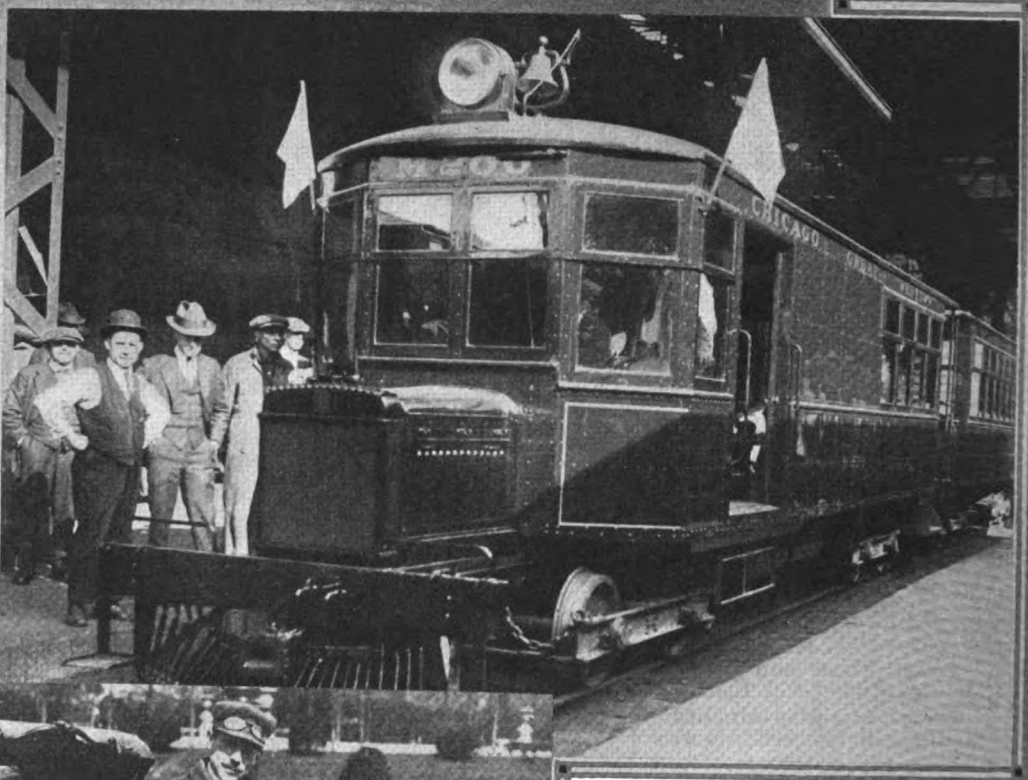
With Loudspeaker Horn—\$170.00, payable \$50.00 down, with six monthly payments of \$20.00.



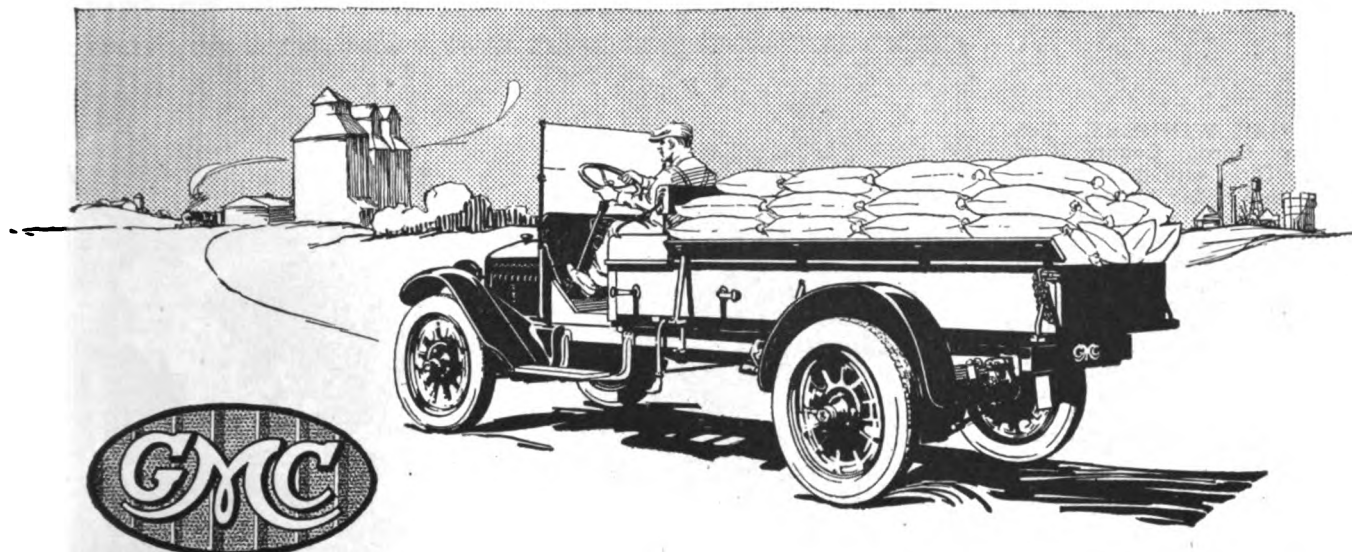
OFF TO SCHOOL. This big motor bus carries the girls and boys to the consolidated school. In fair weather or foul the children have a safe, quick and comfortable means of journeying to their studies. The motor bus has come into general use thruout the country as a means of taking the children to the schools that are as far from some farm homes as 10 miles.

GASOLINE LOCOMOTIVE.

For hauling light trains that are commonly called "accommodations," as they make all local stops, several railroads have adopted gasoline engines as motive power. The picture at the right shows one of the newest types of this equipment. The train, consisting of two cars, was recently put into service by the Chicago Great Western railroad and has proved comfortable and economical.



MOTORCYCLE TAXI. American visitors to Paris, Rome and other European cities have been favorably impressed with this new type of taxi cab. It is an elaboration of the side car commonly used with motorcycles in this country. All the comforts and luxury that are found in the modern automobile have been installed in the cab and the passengers are whisked about the streets at a speed that is alarming. It is predicted that this innovation will be quickly adopted by Americans.



The Best Truck for the Farm

A "Jim-Dandy" Truck

Model K-16, One Ton

\$1295

Chassis only—at the factory

For general farm use, on hard roads or in rough fields, the Model K-16 one ton GMC provides more pulling power, more speed, and more economy than other trucks of the same capacity.

Moreover, this "Jim-Dandy" truck is built from truck parts exclusively—no passenger car parts used. Consequently it has the sturdiness and enduring performance that is demanded for hauling over all kinds of roads and in all kinds of weather.

The exclusive features of GMC construction, developed from more than ten years of successful truck building, have provided this truck with more continuous performance and lower operating and maintenance costs. Due to its advanced design there is not a single wearing part in this truck that cannot be replaced. Such refinements as Removable Cylinder Walls, Removable Valve Lifter Assemblies, Pressure Lubrication, and Instantaneous Governor action all give to this truck the dependability that is so vital in farm trucking.

In every detail of construction the Model K-16 has been built according to the most approved and most advanced practices.

Magneto ignition, electric lights and starter with conduit wiring entirely separate from the ignition wiring, radius rods, thermo-siphon cooling, oversized brake drums, interchangeable brake rods, complete instrument board, pressure chassis lubrication, cord tires—

All these are universally accepted as the best for motor truck use—all these are standard in this GMC.

Measured by any standard this one ton truck has no superiors—and its cost, considering its quality, is much lower.

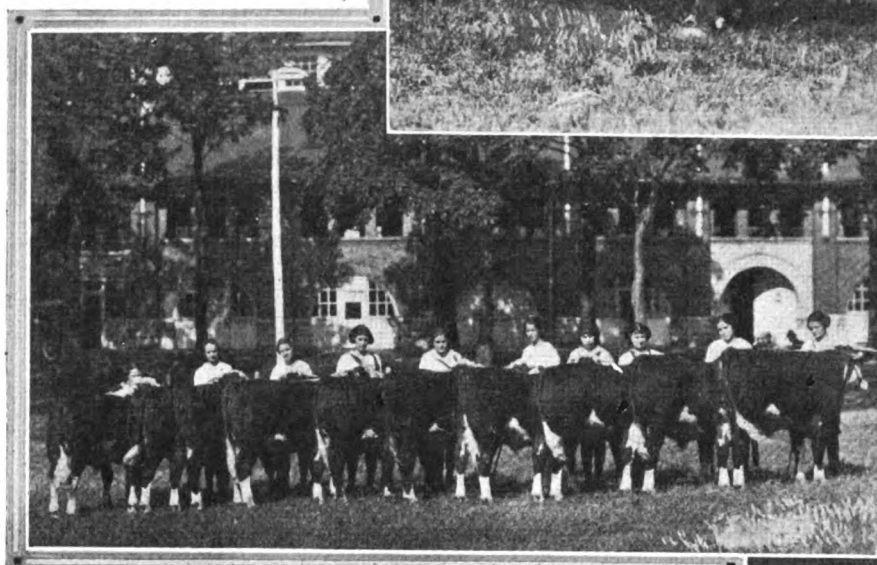
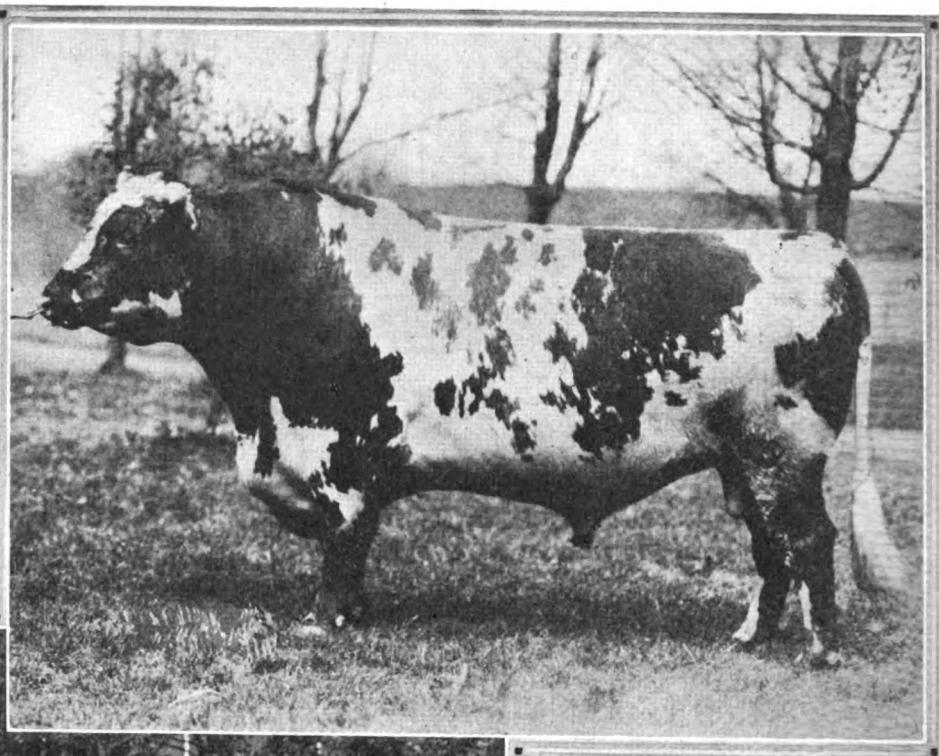
Write for an illustrated booklet, "Motor Trucks on the Farm."

GMC Chassis list at factory as follows: One Ton, \$1295; Two Ton, \$2375; Three and One-half Ton, \$3600; Five Ton, \$3950; tax to be added

GENERAL MOTORS TRUCK CO—Pontiac, Michigan
Division of General Motors Corporation
Dealers and Service in Most Communities

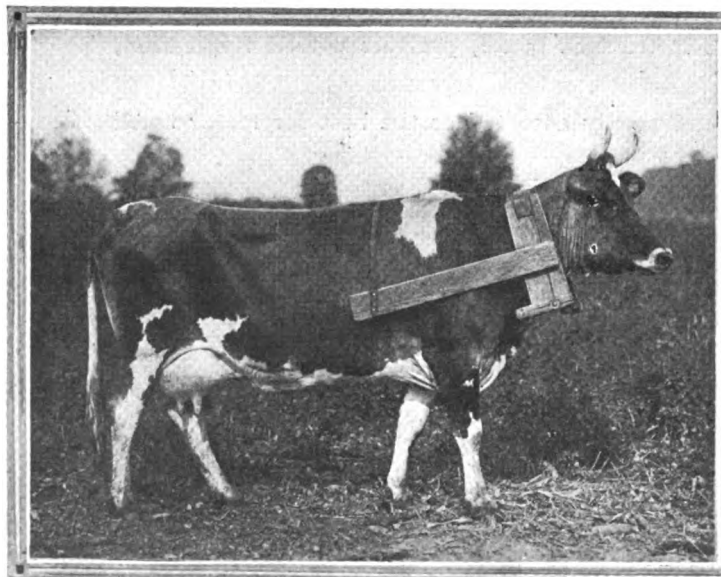
General Motors Trucks

PRIZE WINNERS. Ten Cerro Gordo County Calf Club Girls, attired in "knickers" and middy blouses set a new fashion for baby beef shows at the Iowa State Fair this year. The girls attracted as much attention as their baby beeves by their striking appearance in the ring. "The judge," says the photographer, "gave one admiring look and reached for his whole supply of prize ribbons and decorated the Herefords, which the girls raised." Their picture is shown below. At the right is a prize-winning type of Shorthorn bull.



FRIENDS. Children love dogs and dogs love children. Below we have two beauties, the kind that make life more worth living.

STOPS THE THIEF. Some cows have the habit of sucking themselves. The picture below shows a method to prevent this sucking cow from stealing her own milk.



The Work of the Month



NOVEMBER in the northern and central states usually brings the first touch of real winter, while in most sections of the south there are frosts. Practically all the farm work for the year is finished. Crops are stored or sold, and only the routine work of caring for the livestock and putting things in shape for the rest period remain. The farmer's "fiscal year," as the large business concerns phrase it, is over, and it is time to take an inventory and get the annual statement, showing the business of the year and the returns from it.



MORE and more farmers each year are paying greater attention to keeping an accurate set of books. Costs are recorded and the returns received are set down. The difference between the two items shows whether the season's operations have been profitable or otherwise.



SUCCESSFUL farmers take their livestock up from the pastures before freezing weather sets in, unless the pasture has a strong growth. Grazing pastures too closely before the first freeze saps the vitality of the grass and makes it very liable to winter kill.



AFTER the pasture season is over, the horses, cows, hogs and sheep are put in winter quarters. For the former three weather-tight, well-ventilated buildings are best, as they keep the animals well protected from cold, giving them a chance to better utilize their feed than to use it up to keep the body heat. The latter, the sheep, need an open building, protected on all sides except the south. This is the time to see that the buildings are in good repair; that they are clean and that the stock will be comfortable throughout the time of low temperatures. This is especially true of the milking cows, as their production depends upon their comfort and the care that is given them.

LAYING hens that are confined to the poultry house will not get the necessary exercise to keep them laying unless they are forced to work for their feed. A good litter of straw, or whatever is used, should be provided and the grain fed them scattered in it. Keep the litter clean and dry by changing it frequently.



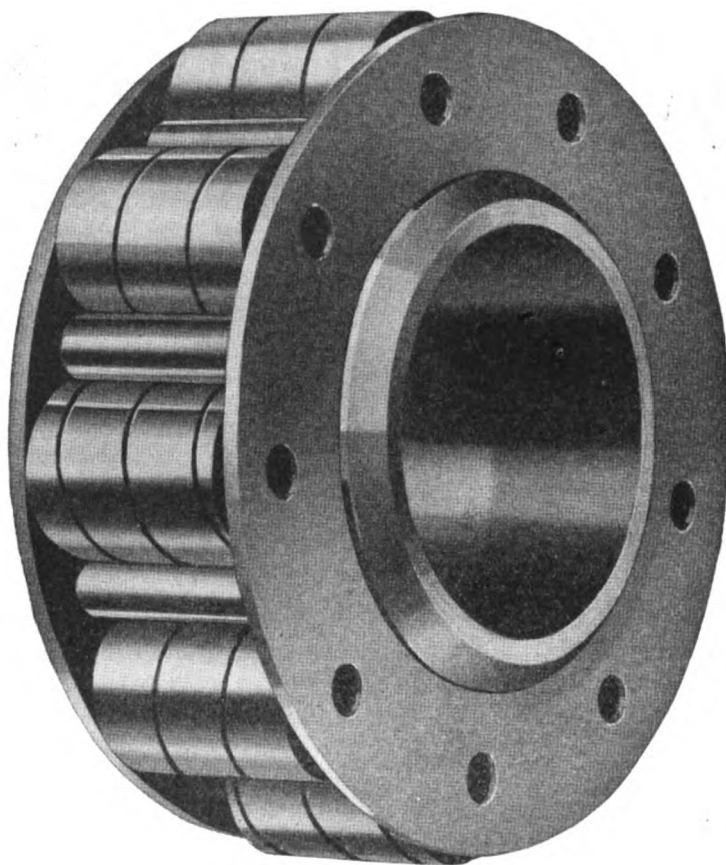
YOU can't beat legumes such as clover and alfalfa as inexpensive sources of protein in feed rations.



THIS is the time of year when attention is drawn to the cost to farmers of leaving machinery and implements outdoors during the winter. Fifteen per cent depreciation is a conservative estimate of what a winter of exposure to weather means to the farm equipment. An implement shed pays for itself in six or seven years and thereafter earns a big profit. However, this does not mean that an elaborate building is necessary; but it should be closed with doors and be weather-tight. In any event unpainted portions of the machines should be treated to a coat of grease after being thoroly cleaned.



This Sort of Storage for the Farm Machinery and Implements Costs American Farmers Millions of Dollars Annually.



Of the thousands of tractors now being placed in readiness for next season's work, 90% need no bearing attention or adjustment. They are Hyatt Roller Bearing equipped.

HYATT ROLLER BEARING COMPANY

Tractor and Implement Bearings Division, *Chicago*

Motor Bearings Division, *Detroit*

Industrial Bearings Division, *New York*

Pacific Coast Division, *San Francisco, Calif.*

HYATT
ROLLER BEARINGS



AS IT SEEMS TO US

Visit the "Fat Stock" Show

THE twenty-third anniversary International Livestock Exposition will be held in Chicago Dec. 2 to Dec. 9. According to Secretary-Manager B. H. Heide, the 1922 "International" will surpass even the brilliant expositions of former years. The entries of prize winning animals and the entertainment and educational features secured have already set new records in the annals of the show. Many thousands of livestock breeders and farmers from all parts of the United States visit the "fat stock" show, and receive more than their money's worth in inspiration and education.

Coming, as it does each year, at the close of the harvest season, this institution brings together in competition for championship honors the finest specimens of field, pasture, feed-lot and paddock—the aristocracy of the animal and vegetable kingdoms. Patrons of agriculture from all parts of the world gather to witness this magnificent display and profit by its lessons. Here the enthusiasm of youth meets the wisdom of old age; theoretical experiments meet practical experience; breeder meets feeder; farmers meet stockmen and producer meets consumer. All elements of the basic industry of mankind are united under the magic spell of this awe-inspiring spectacle to work together for the improvement and uplift of the common welfare. The circles of beneficial influence starting from these annual convocations have extended to every quarter of the globe and have been of untold advantage to the human race.

Agriculture has passed thru a trying period following the greatest war in the world's history and is getting back to a normal basis. The "International" offers an opportunity for the industry to review past events, take stock of the present and plan for the future. The eyes not only of the agricultural world but also of commerce and industry will be turned to Chicago the first week in December, for

the influences which center around the greatest of all agrarian expositions are those which control the destiny of food production and as they prosper so will the other branches of human endeavor be benefited.



BUILD or repair the ice house if there is ice available near enough to make it expedient to store some. About 45 cubic feet of space is required to store a ton of ice and from one and a half to two tons are required to cool the milk from each cow thruout the summer.



THE best trees for the woodlot combine the qualities of useful wood, rapid growth, adaptability to soil and climate and freedom from insects and disease. How about the young trees that you have? The winter's fuel supply can be so cut as to have a larger percentage of good trees.



The Kitchen Is the Center of Interest on Thanksgiving Morning.

Good News to All Our

Agrimotor Magazine Joins Hands With FARM MECHANICS



AGRIMOTOR, the leading monthly magazine devoted to tractors and power farming equipment, has been purchased by FARM MECHANICS, and with this, the November issue, the two publications have been consolidated. There will be no change in the name of FARM MECHANICS. Its purchase of Agrimotor, however, means that FARM MECHANICS will be of greater and more practical aid to readers and advertisers.

Serving as it did the manufacturers and dealers in the tractor and power farm equipment field during the years of its rapid growth and greatest development, Agrimotor achieved a high standing with its readers. Conducted along conservative lines, and serving the industry in a substantial way, Agrimotor was read and respected for

its fairness, truth and honesty in its editorial columns.

Dealing as it did with the technical phases of tractor and power farm equipment manufacture and their use on the farms, the editorial policy of Agrimotor fitted in with that of FARM MECHANICS. Thus the combination of the two publications will give the readers of FARM MECHANICS a still better editorial measure.

Hereafter readers of Agrimotor will receive FARM MECHANICS during the term of their subscriptions. While the subscription list of Agrimotor was not large as such lists are measured in the farm publishing field, it was a substantial one, in that it covers the manufacturers, jobbers and dealers in power farming machinery and implements. These names added to the large list of users, makers and dealers of power farming equipment who already are readers of FARM MECHANICS, give this magazine a still more prominent position among the publications that are serving the agricultural industry.

The publishers of FARM MECHANICS are confident that its readers will find greater editorial value and service in the combined publications. Besides the

Readers and Advertisers!

Farm Mechanics Will Be Bigger, Brighter and Better

special articles that appear in FARM MECHANICS each month, subjects and departments that are carried in the magazine are:

- Care and Operation of the Tractor
- Practical Farm Carpentry
- Radio on the Farm
- New Machinery and Accessories
- Labor Saving Equipment for the Farm Buildings
- Labor Saving Equipment for the Farm Home
- Electricity on the Farm
- The Work of the Month
- Handy Andy's Department
- New Farm Facts
- Motor Trouble Advice
- Better Farm Building Designs
- Our Implement Inspector
- Home Mechanics for the Housewife
- Something the Boys Can Make
- Farm Mechanics Mailbox
- Farm Fun, Etc., Etc.

The editorial matter in FARM MECHANICS is based on a practical knowledge of farm operations, the use of power farming equipment, orcharding, livestock breeding and farm management. Many of the modern methods and ideas recommended and described in FARM MECHANICS are the result of practical tests and experiments conducted on the famous Radford Seven Springs Ranch.

To all of its readers, old and new, FARM MECHANICS renews its invitation to put problems of all sorts up to its editors and farm management staff, who will endeavor to render greater service in the promotion of economical and profitable farm operation.

Extend Your Subscription NOW—At Special Rate

Every reader and friend of Farm Mechanics is given this opportunity to renew or extend his present subscription for three years at the special rate of \$2.00. The regular price for three years is \$3.00. This means not only a saving of \$1.00, but also permits each subscriber to enjoy the greater editorial matter and service made possible thru the consolidation of Farm Mechanics and Agrimotor.

For your convenience a coupon is attached below. Merely sign your name and address and attach your check, currency or money order for \$2.00. We shall extend your subscription for three years immediately upon receipt of the coupon. It makes no difference when your present subscription expires. Do not fail to accept this attractive, money saving offer—NOW.

-----Coupon for Farm Mechanics Readers-----

SPECIAL SUBSCRIPTION OFFER

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1827 Prairie Avenue, Chicago, Ill.

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GENTLEMEN:

Enclosed please find \$2.00 for which { enter
extend my subscription to Farm Mechanics for three years.

Name _____

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Right Plows for Different Soils

Years of Study by Plow Experts Aid Farmers in Getting Their Lands in Better Condition for Planting

By CARL H. GAMBLE

I THINK I am safe in starting this article with the statement that in the average plowman's mind there are three distinct types of plow bottoms: stubble, general purpose and breaker. And it must be admitted that this generally prevailing understanding covers the situation quite accurately, in a nutshell.

Now, it is true that of the three above-mentioned types, there are an almost innumerable variety of modifications. I know of one large plow manufacturer in the Middle West who quite recently had listed for sale a variety of plow bottoms in different sizes and shapes that ran upwards of three hundred. This same factory today lists in its recent plow catalogs and circulars five leading types of bottoms, and I think we can safely refer to these five bottoms as a basis for discussion in this article. The five bottoms are pictured, and for easy reference are named in the picture. They are as follows: stubble bottom, general purpose bottom, breaker bottom, slat moldboard bottom and black land bottom. I will describe these bottoms briefly, and indicate the sections of the country and conditions of soil where they are most commonly used.

Now, before going into the description of the different types of plow bottoms, and the localities where they are used I would like to state briefly the object of plowing, and these, as I understand them, are: first, to cover trash, such as corn stalks, small grain stubble, growing vegetation and barnyard manure, so that a good clean seed bed may be made, leaving nothing to interfere with the young growing crop which is soon to follow, and second, to aerate and pulverize the soil. With the foregoing in mind, then, we can perhaps better understand the whys and wherefores of the different types of plow bottoms.

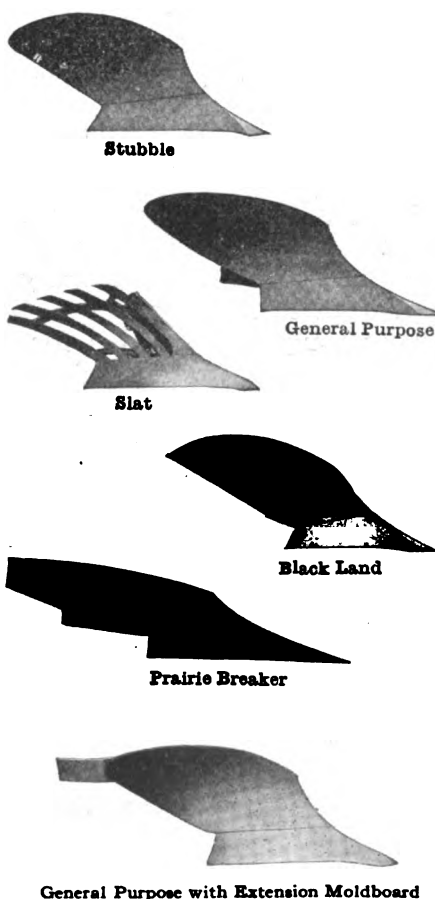
We will consider first the stubble bottom. This is a medium short moldboard, full width cut share, both forming a reasonably quick turn bottom that produces highly desirable results in stubble land, or gold ground, as many farmers term it. The stubble bottom is used quite generally in western Iowa, Nebraska, the Dakotas, Montana and

and Minnesota. It is, of course, used more or less thruout the entire Middle West, but in the territory just described it is used more exclusively. The reasons for this are obvious. It is not so very long since this territory was virgin prairie soil, and after the first plowing, which was of course accomplished with the breaker bottom which we will describe later, has been cropped almost continuously, either in small grain or corn, and the soil generally is of such a nature that it yields readily to the stubble type of bottom. It stands to reason, where there is tame sod to be plowed, such as timothy stubble, the general purpose, or breaker bottom, will do much nicer work, and will prove generally more satisfactory. In alfalfa or clover sod, where the turf is not so heavy, the stubble bottom with proper share and cutter equipment, will be entirely satisfactory.

We will next consider the general purpose bottom. This bottom is quite similar to the stubble bottom, the main difference being in the moldboard, which is con-

siderably longer, and an easier, more graceful turn. The general purpose bottom, as its name indicates, can be used, and is used quite generally, thruout the Middle West, including eastern Iowa, Illinois, Indiana, Missouri and southern Wisconsin, for the general types of plowing found in that territory. It does a very satisfactory job of plowing in small grain stubble, and corn stalks, and at the same time will go into tame sod, timothy, clover, blue grass and the like, and do a most satisfactory job.

If the turf is very heavy, such as in an old timothy or blue grass field, use a breaker bottom extension for the general purpose bottom, to assist in laying the furrow over snugly, and prevent kinking, which is objectionable, particularly in spring plowing, because it results in sod being thrown out on top of the seed beds in the harrowing operation. Practically all general purpose bottoms are now equipped with holes and bolts for the ready attaching of these moldboard extensions. The general purpose bottom with moldboard extension is illustrated, also.



Six Types of Plows in General Use in the United States.



Plows Are Designed to Turn the Soil, Pulverize It, Lay the Furrows so That the Air May Aid in the Pulverization, and to Cover the Trash, or Stubble, Which Contains Valuable Plant Food. The illustration shows a tractor and three-bottom plow doing these very things.

We will now consider the breaker bottom described in the illustration as "Prairie Breaker." This bottom, as its name indicates, was originally designed for breaking virgin prairie sod, and is the only equipment in the world that will do satisfactory work in such conditions. However, it is still sold in fair quantities, and used by many farmers thruout the entire west. It is interchangeable on the beam with the other plow bottoms, and many farmers who have a fairly good acreage of tame sod to plow prefer to substitute the breaker bottom, in order that they may do the nicest looking job of plowing possible. The breaker bottom is also a necessity in marsh land for the first plowing.

A few years ago, when large tractors, and the big engine gangs, from six to twelve bottoms each, were going into the Northwest in great quantities, all were equipped with this type of breaker bottom, and most of them carried, also, the extra stubble bottoms to be used in later plowing.

And now for the slat moldboard bottom. This bottom was designed primarily for difficult scouring soils, and that is still the chief reason for its use. Where the soil is of such a nature, either heavy yellow clay, black gumbo or light ashy soil, that the solid moldboard will not scour, the slat moldboard bottom will give by far the best satisfaction. You will note from the cut, it is a very short moldboard, composed of narrow slats, made of either hardened soft center steel, or chilled gray iron. It does not have near the curvature to it that either the stubble or general purpose bottoms have, the object being to get the greatest possible amount of soil pressure against the smallest possible surface, so as to cause friction enough to keep it scouring. Many attribute to this type of bottom

lighter draft than any other plow bottom. I think this is due largely to the fact that this bottom will scour where many other bottoms will not, and all plowmen know that when a plow does not scour, the draft is increased very rapidly.

This plow bottom is used in some parts of southern Indiana, Ohio, Kentucky and in spotted sections thruout the entire southeastern part of the United States, also in some parts of northern and western Iowa, and eastern South Dakota. Where a good quality of work is desired, and either the stubble or general purpose bottom will scour, I would not recommend the slat bottom, because it will not turn under trash so well, or pulverize the soil so well as the other bottoms, where they will shed.

I want to digress for a few moments, regarding the scouring proposition, because there are many localities where the soil is of a difficult scouring nature, and in such localities the type of plow bottom used may be changed, and has been changed periodically, due almost entirely to the fact that a new, well-polished plow bottom, free from rust and hammer marks, will scour much better than an old rust-pitted moldboard, and an old hammer-marked share, and this emphasizes the fact that plow bottoms, particularly steel plow bottoms, should be thoroly cleaned after using, and greased, so they will not rust.

And now I come to the fifth and last of the series of five types of plow bottoms—the black land bottom—and this bottom again, as its name indicates, is used almost exclusively thruout the southern black land territory, including parts of Alabama, Mississippi, Louisiana and Texas. The soil in a considerable portion of the territory just described is of a very diffi-

cult nature to handle. When it is wet, or in what we would term good plowing condition in Illinois and Iowa, it is very sticky, and refuses absolutely to slide clean off the plow moldboard, and here is where the black land plow comes in, because it is of such a shape, having a narrower moldboard than either the general purpose or stubble bottom, that even when the soil sticks to it, it will continue to cut and turn the soil. The plowman in these territories carries a wooden paddle, and frequently cleans the moldboard, so as to keep the plow doing the best possible work. The black land plow, like all of the others, with the possible exception of the breaker bottom, has many modifications, and yet none of these get very far away from the style and shape illustrated herewith.

A world of experience has been hammered into the shapes of these different types of plow bottoms. Men have devoted, some of them, their entire span of working years to this work. To date there is nothing scientific about the development of plow bottom shapes, and the present leading types of plow bottoms are the result of the "cut and try" method, working from forge to field, until the desired results are obtained.

Now, I feel that I would not be doing justice to this subject if I did not mention the materials from which plow bottoms are made, and these principally are two—steel and cast iron. Plows used almost exclusively thruout the middle west, including the entire Mississippi, Missouri and lower Ohio River valleys, are steel plows, while plows used almost exclusively thruout the New England, middle Atlantic and southeastern states, are made of cast iron; and the reasons, briefly, are that the steel plow scours better, consequently pulls much lighter, and is easier to handle in the Middle West, where the soil does not contain sand, gravel or

volcanic ash, which very rapidly cuts and wears away the steel plow bottoms. The cast iron plow, commonly called the chilled plow, because the moldboard and a portion of the share and landside are chilled, making the surface as hard as glass, is used exclusively thruout the territory already described, because on account of soil condition, gravel, sand, gritty clay, wears much better, and where wear occurs, parts can be replaced so much cheaper than steel parts.

In the borderland between the two territories described, particularly in Michigan, Indiana, Ohio and parts of Kentucky, many combination plows are sold; that is, plows with steel moldboards and chilled cast iron share and landside.

Now, in a general way there is not much danger of a farmer in any section of the United States going wrong in selecting a new plow, because the type of plow for his locality has been pretty well determined, and his dealer will have the kind of plow in stock that he should use.

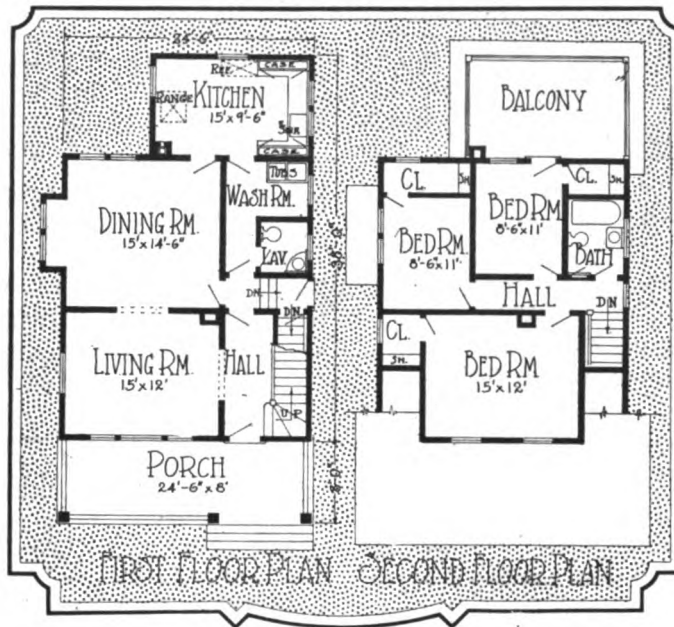
As to the type of plow, number of bottoms, whether horse or tractor drawn, that the farmer on any sized farm might use to the best possible advantage—that, I feel, can be best judged locally. This is a subject that the individual farmer should study carefully, and in most cases he will find the old established implement dealer, who has sold plows for a number of years in his locality, very good counsel.

The various types of bottoms referred to in this article are of the same shape, whether used on walking plows, horse drawn riding plows, or tractor plows, the only difference being in the two latter mentioned, the frog or frame of the plow bottom is made heavier, and in some cases on the tractor plows, the shares are heavier.



Tractor and Two-Bottom Plow at Work in Heavy Soil. Note how the furrows are laid so that the air has a chance to do its work, while at the same time the heavy vegetation is well covered.

FARM MECHANICS BUILDING DESIGNS



STORY-AND-A-HALF FARM HOME. No type of architectural design is more popular for farm homes than the story-and-a-half house. Usually the roof slopes in a graceful line to the front and covers a porch that extends the width of the house. By placing a good size dormer in the roof at the front, an attractive bedroom is secured, which, added to those made possible by the end gables furnishes plenty of sleeping rooms for the average family. The design shown is 24 feet 6 inches, by 38 feet, and contains six good-sized rooms, living and dining rooms and kitchen, while three bedrooms and bathroom are shown on the second floor. A grade entrance at the side leads both to the basement and first floor, while, it will be noted by the plans, there is a direct means of getting to either front or back door without going thru either the living or dining room.

House the Chickens Comfortably

Clean, Light, Weather-tight Houses Keep the Flocks Healthy
and the Hens Laying

By JOSEPH D. EDDY

SUCCESSFUL poultrymen pay a great deal of attention to the houses in which their flocks are kept. The buildings are well constructed and weather-tight; they are provided with the best of ventilation, so that the birds have plenty of fresh air, but are not exposed to drafts; and the interiors are kept clean—spick and span.

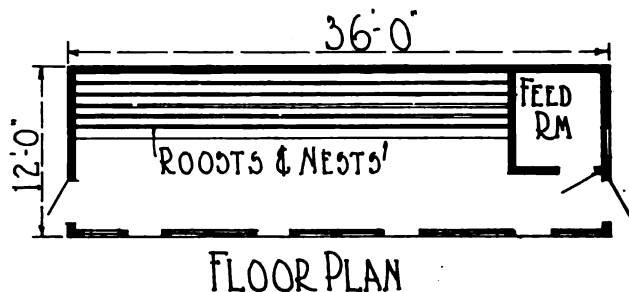
The building in which chickens are housed has a great deal to do with the productiveness, and, consequently, the profitableness of the flock. For upon the building depends a great deal the health of the birds, and healthy chickens are the ones that pay for their keep and leave something over for the bank account.

Practically every farmer keeps chickens, as they are a sideline that provides ready cash, as well as a great deal of food for home consumption. The average farm flock of 150 to 300 birds does not require such elaborate houses as are found on the farms that specialize in chickens. The farmer can profit by the experience of the professional poultrymen, however. He can build the chicken houses on his place along the same lines as the buildings that shelter the show winners and the utility breeding stock that are found on the big poultry farms.

Just as there is a recognized width for an efficient barn, so there is for a poultry house. The houses are 10, 12 or 15 feet wide, and as long as the size of the flock demands. One side of the house should be open, or so equipped with windows that it can be opened.

The building should be located so that the side faces the south, to get the benefit of the winter sun. The floor of the house should be of a material that provides good drainage, so it will never be damp, or make wet the litter in which the chickens run.

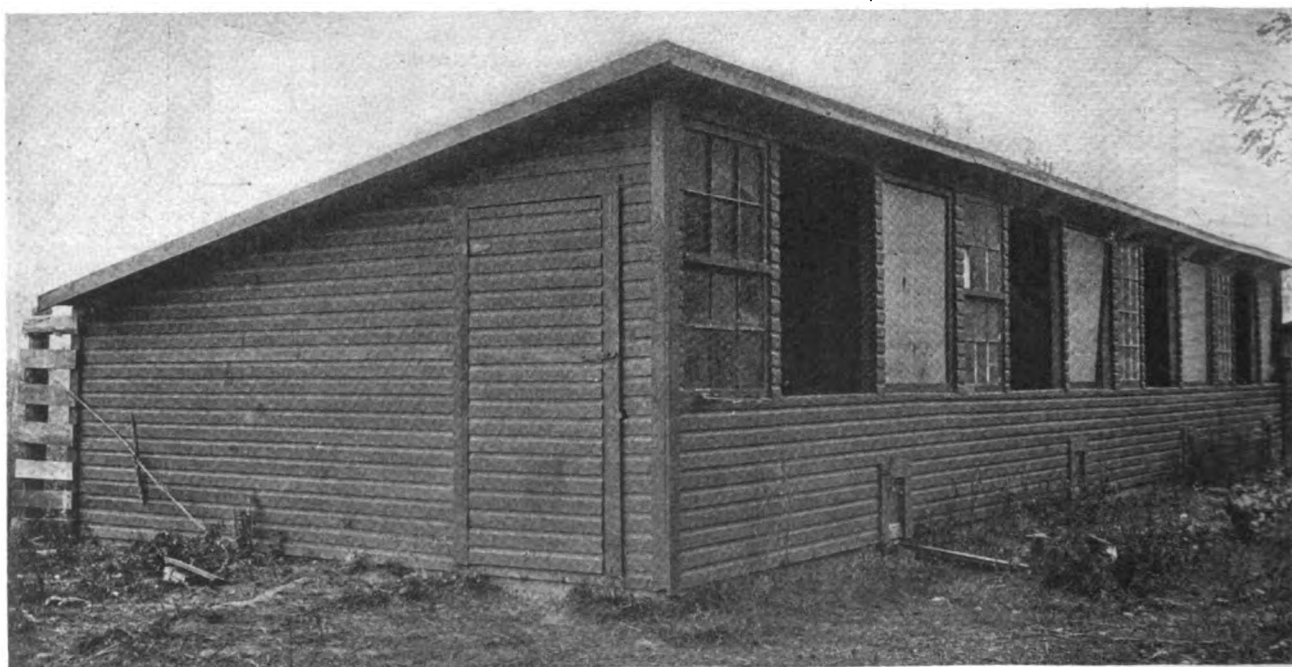
A good chicken house for the farm that has a flock of about 100 birds is shown in the illustration on this page. This house is 12 feet wide and 36 feet long. It is substantially constructed of lumber, with matched siding that makes it weather-tight. The south front



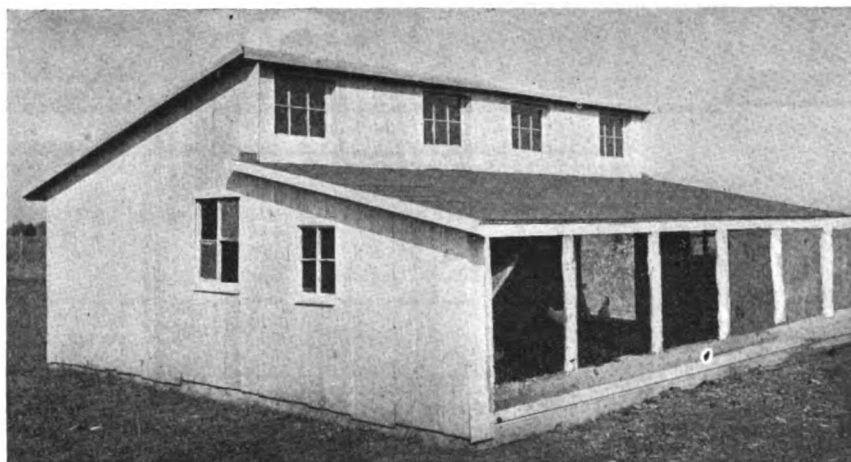
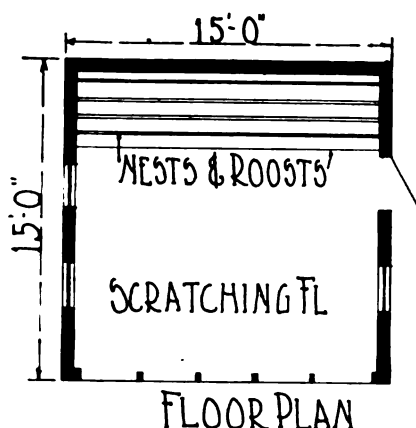
Floor Plan of Chicken House Shown Below.

has four windows, that slide open, behind a screen of wire netting. This arrangement makes it possible to ventilate the house well, and at the same time prevent the chickens from escaping thru the windows.

As will be seen by the floor plan that accompanies the exterior view of the house, the scratch floor is at the front and the nests and roosts at the back. At one end is a small room for storage of feed. Four small



A Good, Substantial Chicken House for the Average Farm Flock. The building faces the south and is well constructed and weather-tight.



Floor Plan of Saw-Tooth Roof Poultry House.

Saw-Tooth Roof Poultry House, Which Admits Light and Fresh Air to All Parts of the Interior.

doors at the floor line permit the birds to leave and enter the house. Doors of this size are common in most chicken houses, but experts say they should be much larger to prevent the chickens from jamming against the frames when several try to pass thru at the same time.

A smaller house of the saw-tooth roof type is shown in the second illustration. This is a practical, inexpensive building for a small flock. It is 15 feet square and is of frame construction. One part, that faces the south, is of the open-shed type, one side being without walls, but covered with wire netting. By having burlap curtains inside, a great deal of cold may be kept out in winter, and drafts prevented from striking the roosts, which are in the rear. The monitor wall of the roof of the back portion of the house gives an opportunity for windows to admit light to the roosts and nests.

Both of the houses are well constructed of good materials, but neither one is expensive. They are designed to meet the needs of the average farmer, who, while he does not specialize in chickens, finds that a fair-sized flock amply repays him in food and money for the care and expense necessary to keep the chickens in a healthy, productive condition.



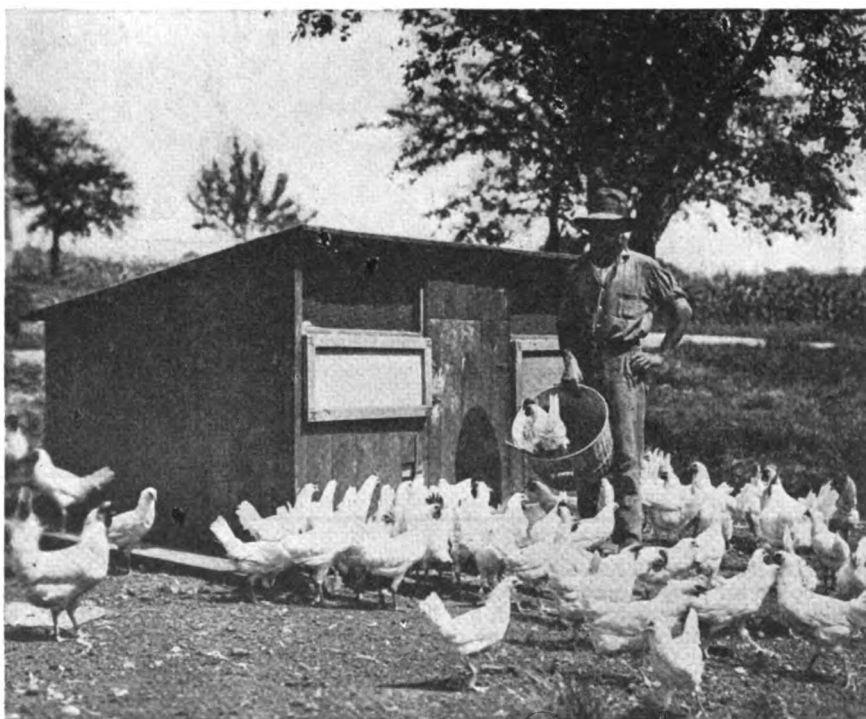
Tobacco Growers to Use Seed Treatment

INDICATIONS are that many Kentucky tobacco growers will try seed treatment during the coming season in an effort to control wildfire and angular leaf spot, the two most serious diseases of tobacco occurring in the fields, according to W. D. Valleau, plant pathologist at the Kentucky Agricultural Experiment Station.

The treatment which gives promise of rendering the seed disease free involves the use of bichloride of mercury which is being recommended in preference to formaldehyde as the latter resulted in some injury last year when the seed was not thoroly washed, according to Mr. Valleau. The seed is soaked for 15 minutes in a solution made up of one part of bichloride and 1,000 parts of water, after which it is washed thoroly in several changes of clean water. Metal containers cannot be used in the soaking process. After the soaking and washing the seed is dried quickly by placing it in a cheese cloth bag and swinging it around at arm's length several times to remove the surplus water, after which it is spread out in a thin layer.

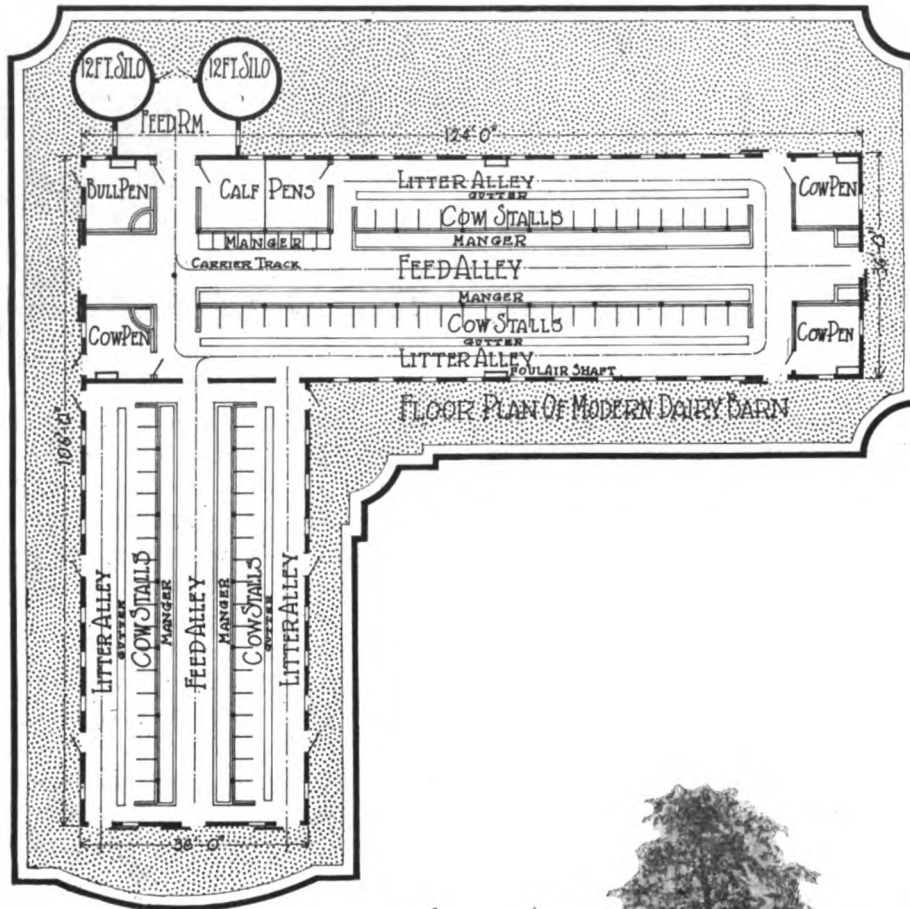


IF the relations between tenant and farm-owner are cordial, neither side worries about a long-term lease.



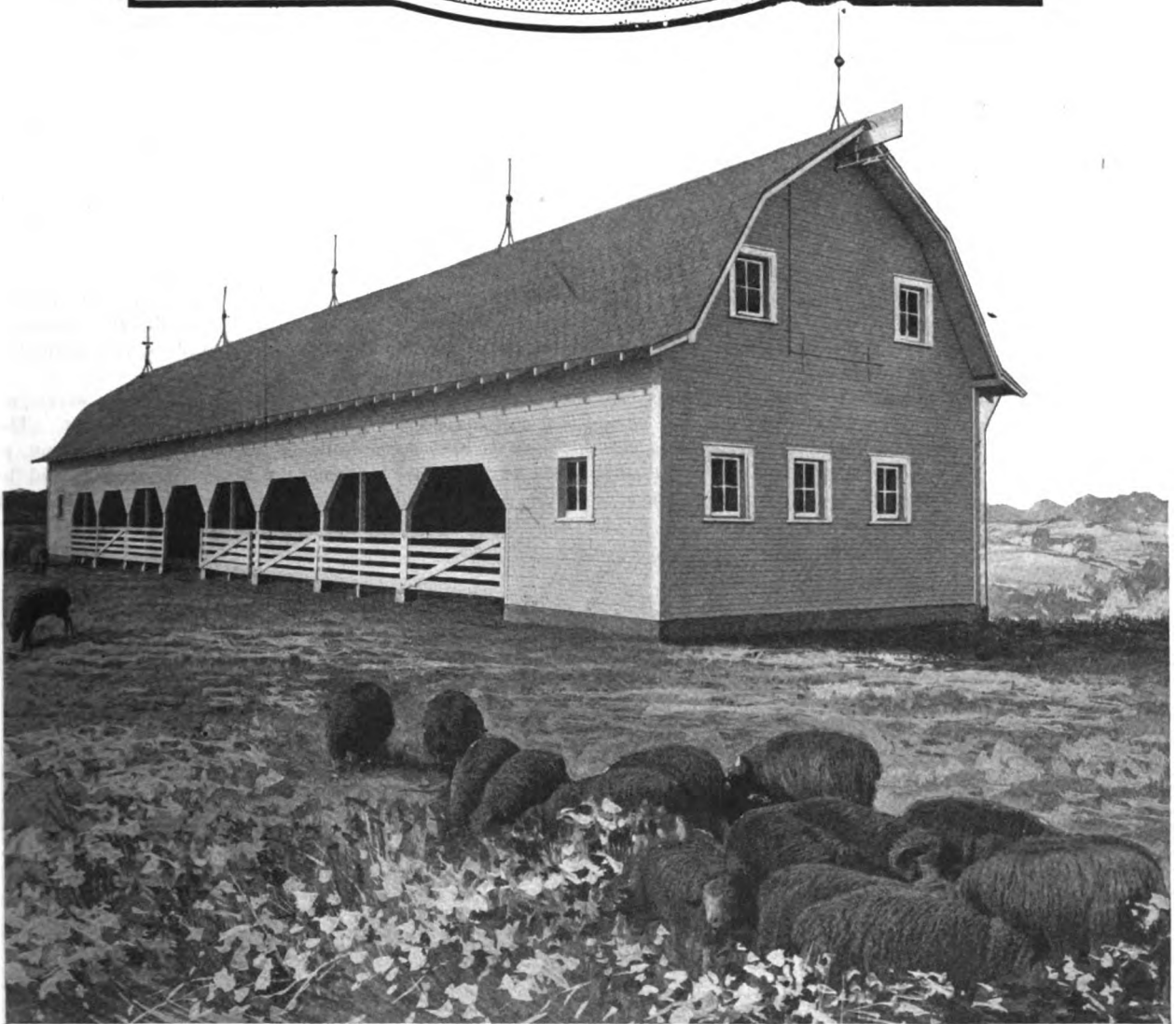
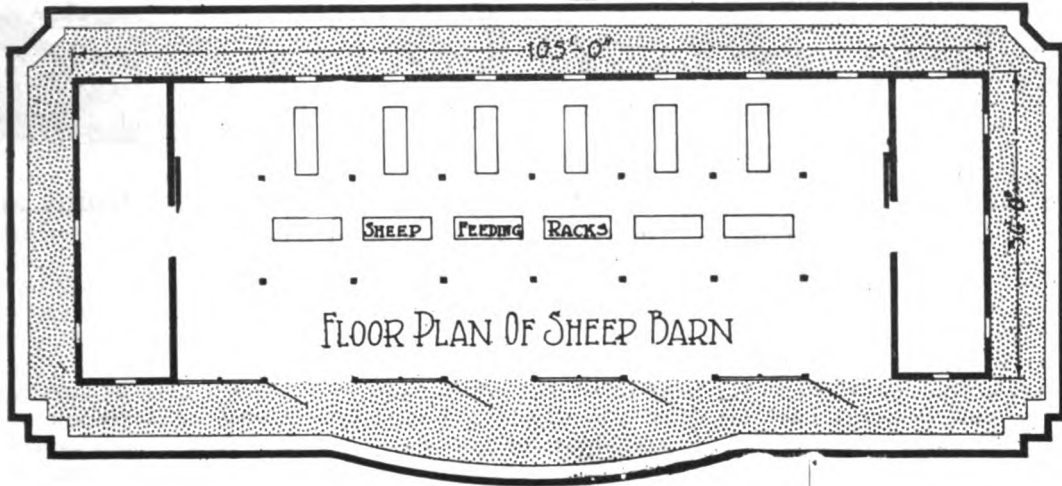
A Good Flock of Chickens Is an Asset to Any Farm.

BARN BUILDING DESIGNS



MODERN COW STABLES AND BARN. The one-story cow stable as an adjunct to the dairy barn with its storage space for roughage on the second floor, is a popular building with owners of dairy herds of a considerable size. The stable, of course, costs less to build, but houses the milking cows comfortably and keeps them healthy and productive. Such a combination is shown in the design above. The cow stable is built at right angles to the dairy barn proper and is located so that the ensilage and feed may be gotten to the mangers in both buildings by traveling the shortest possible distance. Each building is 36 feet wide, the larger being 124 feet long and the smaller 70 feet. Stanchions for 79 cows, pens for the bull and calves and maternity pens are included in the floor plans. The stables are equipped with steel stanchions, a litter and feed carrier and drinking cups, while in the buildings a modern system of ventilation is installed. This plan contains some worthwhile suggestions for the dairyman with a rather large herd.

MECHANICAL BUILDING DESIGNS



HEALTHFUL HOUSE FOR SHEEP. While sheep put on a warm woolen coat for winter, they, like humans, must have a protection from cold winds and stormy weather. But, unlike some of the other farm livestock they do not want to be shut up. Because of these facts, the open front sheep barn has been developed by farm architects. The building should be set east and west and be open at the south, thus giving the flock a chance to secure protection from the coldest of the winter winds. This building is of frame, and has tight walls, altho some flock owners use slatted walls at the ends. Overhead is space for the storage of roughage and the other feed the animals require. Movable feed racks are shown on the plan. An addition to the building that is often made is a storage cellar for root crops within the building. The building shown is 36 feet wide and 105 feet long, sufficient for a good-sized flock.



Bill Gives His Father Some Ideas of the Value of the Woodlot at Home and How It Can be Made to Yield an Annual Profit

DEAR DAD: I don't suppose you ever stopped to think of the value of that woodlot at home. To me those twenty-five acres of woods merely constituted a fine place to play, camp out and hunt squirrels when I was younger. To you, I guess, they were twenty-five acres that were pleasant to look at in spring, summer and fall and a place to get out fence posts and firewood in the winter. I know the cows like those acres, as many's the time I have had to chase them out of the woods when milking time came.

However, since I listened to a talk given by one of the extension workers in the forestry department the other day that woodlot has taken on a new significance. There's money in it, a nice steady year in and year out income, just as there is in the acres we crop.

Much blame has been laid at the doors of farmers who have cut off their woodlands. Deforestation, it has been charged, has been the cause of dry spells in summer thru lack of wooded lands to hold the moisture. But until a few

years ago farmers considered woodlands as waste lands, and cleared them as rapidly as possible.

There is a way by which owners of woodlots can eat their cake and have it, too. That is by scientific and intelligent management of the woodlots. Each year take off the matured crop of trees, leaving the immature for another year, and so on. The woodlot will be the better for the cutting, the remaining trees will have a chance to grow and the "waste" land will be yielding an annual income.

Trees grow so slowly that they never seem to grow at all. But they do, just the same. Each year sees a slightly larger girth and the tops extending higher. Twenty years is the average time it takes for the trees to reach a marketable size, some reaching a diameter of fifteen inches in twelve years, while others take twice that length of time to get as big. So the average has been fixed at twenty years, giving every owner a basis to work upon in harvesting his woodland crop. If there are 100 trees, then five may be cut and

marketed. The safe percentage to remove is five, so that every year there will be that many more of a size that can be cut with profit.

That is what the forestry experts call "intelligent management of the woodlot." Only as many as will be replaced in twenty years are taken in that length of time, the cutting being divided up into twenty parts. Those that are left are the better or the thinning. I have often been in a dense woods of second growths and marveled at the height of the trees and the smallness of their trunks. They are doing what every plant does—expending their energies to reach the sunlight.

So you see, dad, there is profit to be made out of the woodlot. Reduced to a basis on which we all can realize what a woodlot will produce, it is figured this way:

Suppose the twenty-five acres were cleared and planted to wheat. There would be all the work of plowing, preparing the seed bed, seeding and harvesting and marketing the grain. If the

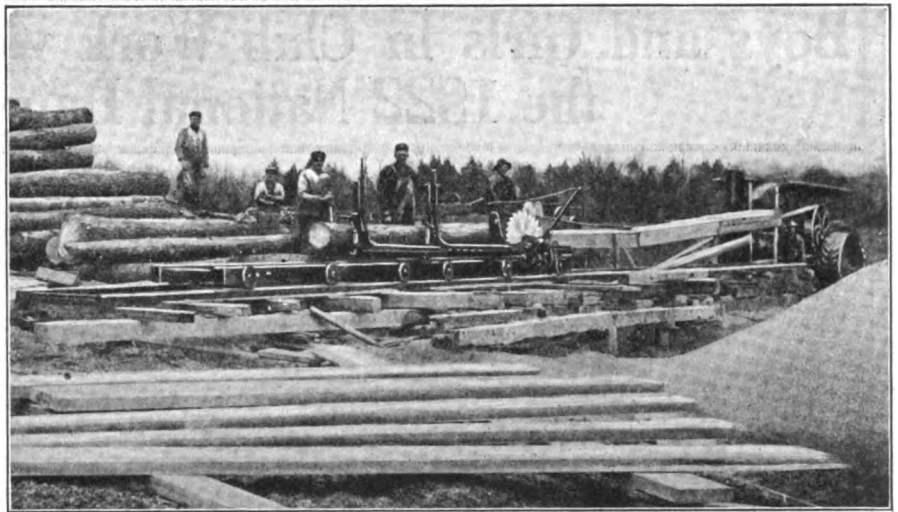


Clearing Level Land with the Aid of a Portable Sawmill. Such land as this often is more valuable for crops than to maintain as a woodlot.

land produced twenty bushels to an acre we would have 500 bushels. At \$1 a bushel the gross revenue would be \$500. On a twenty-five acre tract of woodland there are probably 250,000 board feet of lumber, from which 8,000 to 12,000 board feet may be safely cut each year. This amount will be replaced each year by the growth of the remaining trees. Eight to twelve thousand feet of lumber are worth from \$350 to \$500, while besides the lumber there are twelve to fifteen cords of good firewood from the small limbs and slabs. Thus, it is figured, woodlands produce as much revenue as cropped lands, and it is obtained by cutting and logging without planting or cultivating. And the lumber harvest is never pressing. The work can be done in winter, or at times in the year when there is no other work to do. Harvesting the lumber crop provides profitable, odd-time work for the farmer and his men.

Marketing saw logs is not done now as it was when you were a boy. Then, as I have often heard you tell, the logs were hauled by sleigh or wagon to the saw mill, one of which was in most neighborhoods. As the woods disappeared and logs became scarce, one by one these mills went out of existence, and with them the old water wheel that furnished the power to operate them. These mills were slow affairs, their capacity being about 1,000 feet of lumber a day. They were superseded by those driven by steam engines, with a capacity of ten times as much lumber as the water-driven mills. But these, too, except in regions where there still is a large supply of timber, have gone and in their place has come the small, portable outfit that requires only a comparatively small investment and can be operated by the tractors that are part of the modern farming power equipment. These mills are taken to the timber, rather than the timber being taken to them. For the smaller of these outfits from eight to twenty horsepower is required. They will saw logs 36 inches in diameter and 20 feet long and turn out from 3,000 to 8,000 feet of lumber a day. Being light and easily transported, the mills can be taken into almost any woodlot, whether it be in swamp land or rough land.

With this outfit any sort of a tree in the woods can be turned into marketable lumber. The smaller trees, those less than 8 inches in diameter, can be cut into 2 by 4's, 2 by 6's, fence posts, crate stock, box boards and even shingles. Logs about 8 inches in diameter are turned into railroad and interurban line cross-ties. Trees over 8 inches in diameter are cut into lumber of various thicknesses, which readily finds a market with the local lumber dealer or can be used for building. Nothing need



The Crew and the Portable Saw Mill Busy Turning Logs Into Saleable Lumber.

be wasted. The slabs from the larger logs make excellent firewood as do the limbs and tops.

There is another phase to this subject, dad, that makes it look profitable to own one of these outfits. That is the opportunity to do custom work for the neighbors. You know a number of them own woodlots and would undoubtedly be glad of the opportunity to get some of the marketable trees in them turned into money. Thus the tractor would be kept busy and would earn a profit on the investment all during the winter months.

It is now six weeks since I came to the college and I find that every day gives me a better idea of the importance of our business—farming. Also I am learning new methods of doing things, which will enable me to help make the old farm more profitable. Agricultural colleges mean much to the future farmers of the country, and it is remarkable

the amount of work the men connected with them are doing to make farming a more profitable business.

I expect to be home for Thanksgiving. Evelyn came up for a few days and we had a good time together. She's looking fine. I got the cake, also the other good things mother sent. Tell her the fellows agree with me that she's a fine cook. My love to her.

—Your affectionate son, BILL.

✠
THE farmer who contracts for next spring's seed corn in the fall, probably won't have to take up with an inferior variety of poor quality.

✠
Butter is now coming out of cold storage at the rate of about two and one-half million pounds a week and going in at the rate of only one and a half million pounds a week. And the winter is still young!



A Close-Up View of the Portable Saw Mill. Wooden tracks are laid where there is much timber to be cut and sawed and the lumber is carried to the pile.

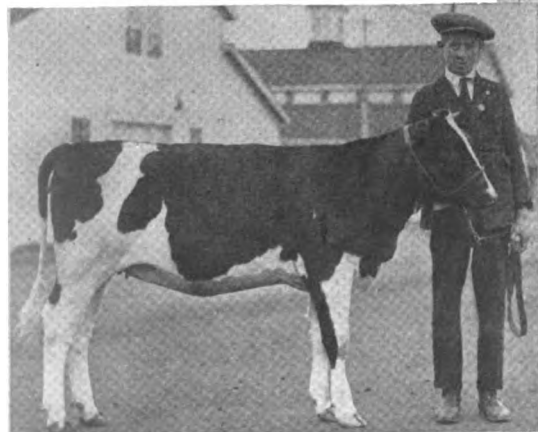
Boys and Girls in Club Work were Prominent at the 1922 National Dairy Show



Elizabeth Willerton, Age 13, Bridgeport, Ohio, Champion Individual Junior Cattle Judge, Beating 44 Boys by 31 Points.



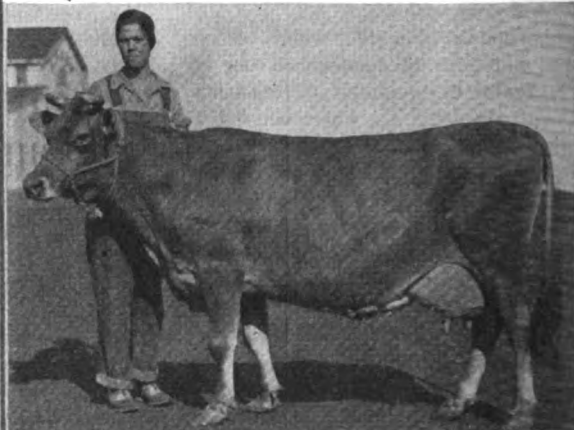
First Holstein Bull in Calf Club Contest, Owned by Clarence Sharer, Anoka, Minn.



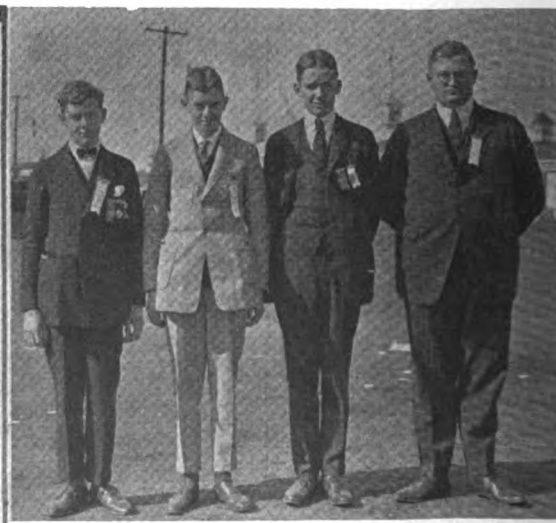
First Holstein Heifer in Calf Club Contest, Owned by Percy Engle, Stewartville, Minn.



Milwaukee School of Agr. Milk Demonstrating Team. Left to right—Mable Kleinmann, Theresa Potzner, Meta Berkham.

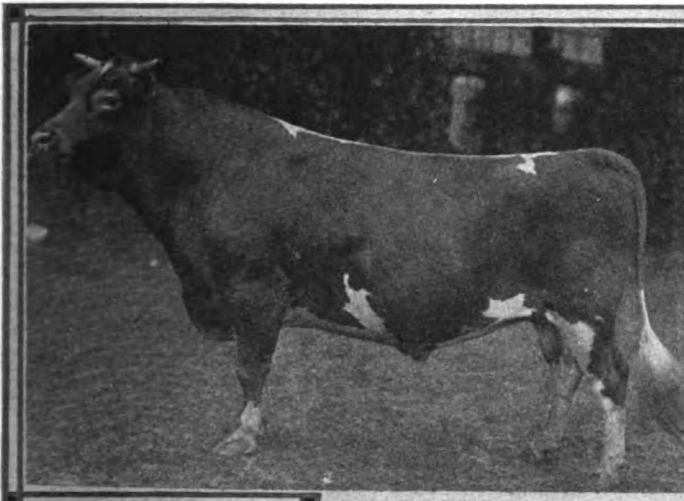


Elizabeth Farley, Amherst, Mass., Premier Junior Demonstrator and Club Girl.

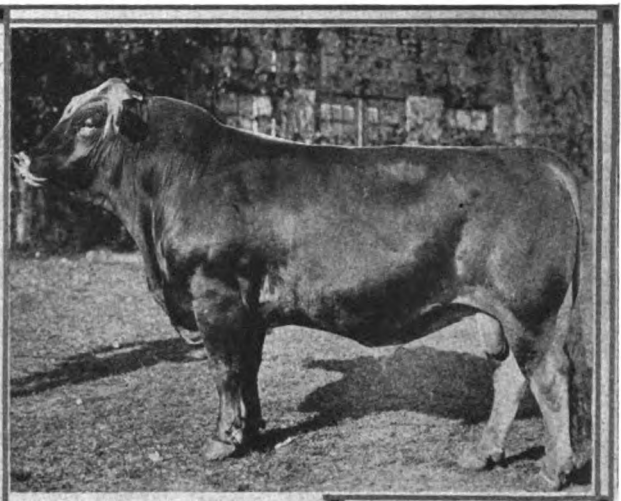


First Junior Cattle Judging Team From Hartford, Md. Left to right—C. F. Cushing, H. L. Snodgrass, R. N. Willis, and B. B. Derrick, who coached the boys.

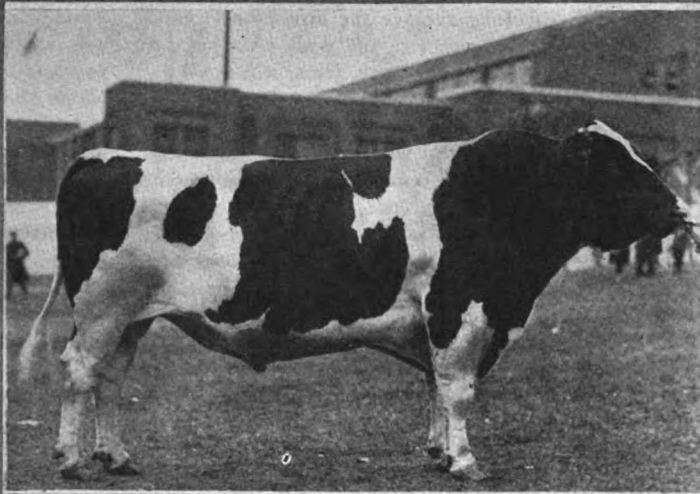
Champions at the 1922 National Dairy Show



Owned by Tarr Bros., New Auburn, Wis., Grand Champion Guernsey Bull.
"Boss of Koshkonong,"



"Nellie's Stasis," Owned by Marshall & Sons, Leslie, Mich., Grand Champion Brown Swiss Bull.

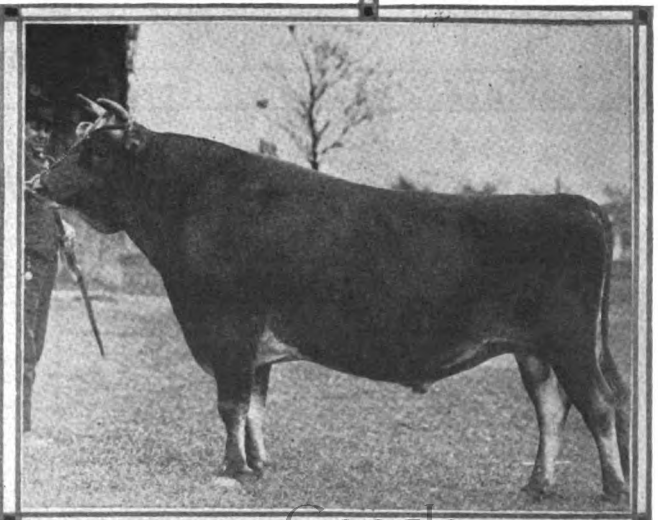
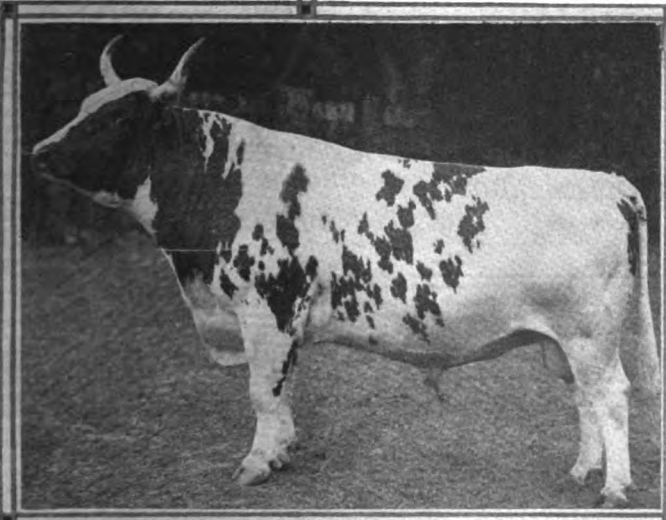


"Dutchland Aggie Tiny Prince 2nd," Owned by John Erwin, Minneapolis, Minn., Grand Champion Holstein Bull.



"Fern's Wexford Noble," Owned by Twin Oaks Farm, Morristown, N. J., Grand Champion Jersey.

"Imp. Howie's King of Hearts," Owned by Adam Seltz & Sons, Waukesha, Wis., Gr. Champ. Ayrshire.



How to Build a Radio Set

Outfit That Will Receive Messages from as Far as 1,000 Miles Can Be Constructed at Small Cost by Following the Directions Given in This, and Succeeding

Articles by Mr. Carr

By A. H. CARR

[EDITOR'S NOTE—This is the second of a series of articles that describe in detail how to build a long distance Radio receiving set. Mr. Carr, the author, is an amateur wireless "fan," and constructed the set he here describes for his own use. It has proved very satisfactory, he having heard distinctly concerts given more than 1,000 miles away. The first of these articles appeared in the October issue.]

Winding the Coils

EACH of the cardboard rings must be wound with No. 26 S. C. C. (single cotton covered) copper wire. This will require about 300 feet of this wire, or $\frac{1}{4}$ pound.

To simplify matters and to make it easier for anyone who happens to be a beginner, we shall start at the real beginning of these coils and give their "radio" names and explain their action as we go on with our construction.

The first coil to come into action when receiving a message is the large one and to the radio-wise this is known as the vario-coupler stator. The name stator is given because this part is stationary and does not move. Why it is called a vario-coupler can be better understood later.

The edge of this ring which has the two slots opposite each other should be labeled "top" and the side which has the one slot below the other should be labeled

"front" to simplify the explanation. (See Fig. 4A.)

This is the only difficult coil to wind, so great care must be taken. To start, punch two pinholes thru the tube and about one-quarter inch apart in the front side and in a direct line with the lower edge of the top slot. These pinholes should be about two inches to the left of the slot. The end of the copper wire, cotton covering and all, should now be run down thru the pinhole nearest the slot and up again thru the other pinhole, leaving about four inches for connecting purposes. Wind to the right, always, unless otherwise specified.

After two turns have been wound on, carefully remove the insulation from $\frac{3}{4}$ inch of the wire and wrap on a piece of the same size wire from which all the insulation has been removed. This piece is wrapped round and round the bare place on the wire until the whole bare spot has been covered. Wind it smooth and even—do not stack it. The loose end, which is about four inches long, should leave the main wire about one-eighth inch to the right of the first pinhole. The winding can be continued after running a cigarette paper under the bare spot to separate it from the wires on either side.

This lead-off is called a "tap" and similar taps should be made at the end of the fourth, sixth, twelfth, eighteenth, thirtieth and forty-second turn. Each time

the loose end should leave the main winding about one-eighth inch to the right of the preceding tap. This is called staggering the taps and it keeps the loose ends better separated.

After the fifty-fourth turn is on, if you have put the wire on evenly, the edge of the winding should be just about even with the upper edge of the lower slot. This end should be anchored thru pinholes the same as at the start, leaving about four inches of loose wire for connections.

This coil is so constructed and connected that the wireless waves, which are caught by your aerial start at the top end of the wire which you have just wound and travel round and round the coil, finally departing from the coil thru any one of the loose ends of the wire which you may choose to touch against the wire which leads from your instrument down into the ground. This coil is for changing the length of your aerial and enables you to add on several feet of wire to your aerial so that it will be, in effect, the same length as the effective aerial which the broad-casting station is using, or, in other words, in tune. By touching the top tap to the ground you have a very short aerial and by touching the bottom tap to the ground you have a very long aerial, and so on.

Of course we don't want to stand and hold these wires against the ground wire all the time so we employ a simple de-

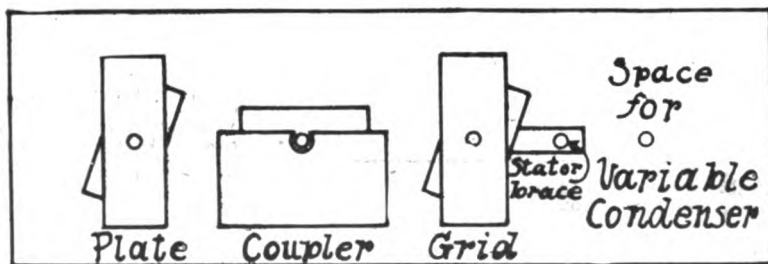


Figure 5-A Rear of panel, showing arrangement of coils

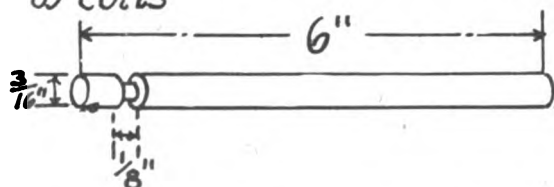
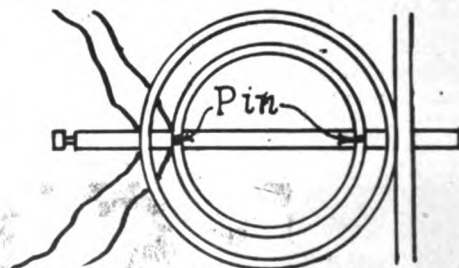


Fig. 5, C-Notched wooden axle



Notice the two ordinary brass pins pushed down between the layers of paper ring into wooden axle

Fig. 5, B-Mounting the coils

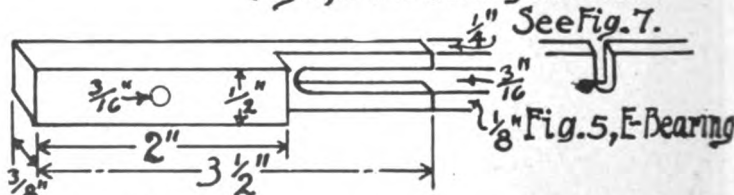


Fig. 5, D-Variometer stator brace

Drawings Showing How to Make and Wind the Coils and the Way They Should be Installed in the Radio Outfit.

vice called a switch to do it for us. This will be described later.

The Vario-Coupler Rotor

Next let us wind the rotor or revolving part of the coupler. For this one of the small rings is used and fifty turns of wire is wound on, starting by anchoring $\frac{1}{8}$ inch from one edge, winding on twenty-five turns, skipping over $\frac{1}{4}$ of an inch to miss the $\frac{3}{16}$ -inch holes and applying another twenty-five turns. The start

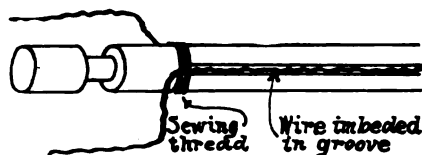


Fig. 6
Showing How to Hold the Wires in Place.

should be even with one of the $\frac{3}{16}$ -inch holes drilled in the side and the finish, should be even with the start and should be about one-eighth inch from the edge. A third pinhole should be punched on each side of this coil about one-eighth inch from the others and the loose ends of the wires should be run thru these toward the inside of the ring and left extending about four inches for connections.

When the wireless waves from the aerial are whirling around the stator windings of the coupler they create or set up a region or field of influence for several inches around in every direction. This influence is called magnetism, and the field of influence is called a magnetic field. Now, if another coil is placed inside this there will be waves set up in the small coil similar to the ones in the larger coil.

This influence of the large coil over the smaller one can be varied or changed by rotating the small coil within the larger and for this reason the small coil is made so it will rotate.

The Variometers

The other four coils are wound in exactly the same way as the coupler rotor, having fifty turns of wire each. The only difference is that on the large coils the ends of the windings are left turned outward instead of projecting thru a third pinhole toward the inside of the coil as they do in the small coils.

After all the coils have been wound each must be given a very thin coating of shellac and dried thoroly in a warm (not hot) oven.

Mounting the Coils

The coils are all mounted or set up in pairs as shown in Figure 5-A and use three $\frac{3}{16}$ -inch wooden dowels or small round pieces of wood (each 6 inches long) for shafts. Each pair of coils is placed on one of these little axles as shown in Figure 5-B so that all the loose connecting ends of the coils are towards the rear end of the axles. The front ends of these dowels extend thru the panel five-eighths of an inch. Each shaft is provided at the rear end with a little notch cut all the way round and allowed to turn in a wooden support which just fits into this notch.

The dimensions used in cutting these notches in the shafts are shown in Figure 5-C and the making of the supports will be described in detail later.

The variocoupler stator (the large coil with the taps) is slipped up under its rotor so that the top slot at the front slides around the axle. The stator is held in place by a brass bolt and nut extending thru the panel and lower slot. The rear end of the dowel on which the variocoupler rotor is placed will now fit down into the $\frac{3}{16}$ -inch slot cut in the back side of the stator and should rest on the bottom of this slot.

The two variometer stators (or large coils) are held in place by small slotted wooden pieces shaped something like D in Figure 5. These pieces are secured to the panel by small brass bolts and nuts—the heads of the bolts projecting thru the holes drilled for them in the panel.

The rotor tubes should fit onto the axles real tightly so they will not slip, but the axle must turn freely in the stator tube. If the two holes in the rotor tube fit snugly it will not be necessary to fasten the rotor to the axle, but if these holes fit loosely the rotor will have to be fastened to the axle by two ordinary pins pushed down between the layers of the paper ring and to the wooden pin as shown in Figure 5-B.

The Axle Support

A suitable support is required to hold the rear ends of the axles steady. This part can be whittled from a $\frac{1}{4}$ -inch board

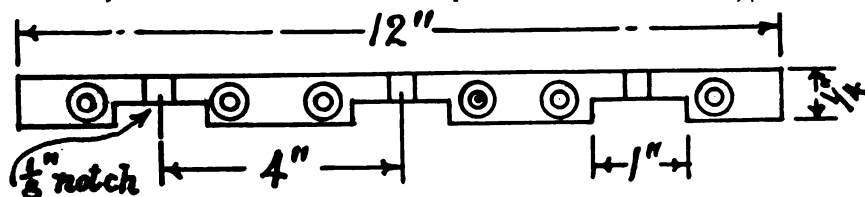


Fig. 7, Notched axle support

Support for the Axle of the Coils with the Dimensions it Should be Made.

and shaped as shown in Figure 7. The slots should be made to exactly fit the notches in the wooden axles. Small brass wood screws and brass washers are placed as shown. These are to be used for binding posts in connecting the loose ends of the coils. The dimensions for the support are all shown in Figure 7 except its height. The height of the support, of course, depends upon the thickness of the base used. To determine this dimension measure from the base upward to the holes drilled in the panel for the front end of the axles.

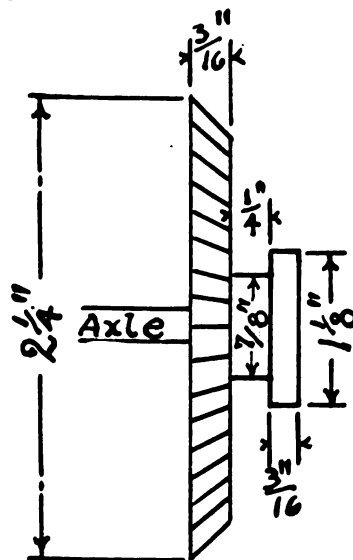


Fig. 8, Knob and dial

Complete Knob and Dial.

Both ends of the axles must be, of course, held level or the dials on the front of the panel cannot be turned.

Connecting the Coils

The Variocoupler Stator—The upper end of this coil is connected to the binding post marked aerial in Figure 3. Each one of the taps is connected in the order to switch points placed in the little row of holes which were drilled to receive them. The first tap goes to the top point, the second tap to the next and so on. Make sure these wires are not touching each other anywhere.

The Rotors

The Rotors—The loose ends of the rotor windings must be gotten out thru the holes in both the rotor and stator tubes along with the axles. To do this a small groove may be scratched deep enough into the dowel along its opposite sides so that a wire may be imbedded into each deeply enough that it will not rub against the tube where it goes thru the holes. To hold these wires down into the grooves a sewing thread should be wrapped around the axle a short distance

from the notch. This will hold the wires in place as the rotor is being turned. See Figure 6.

Connecting the Variometers

One of the wires leading from each of the variometer rotors must be connected to either of the wires leading back to its own stator. This leaves two loose ends on each of the three pairs of coils. (The ends of the rotor windings should be fastened to the brass screws on the notched axle support, leaving play enough to allow at least half a turn to the rotor.)

Either one of the loose or disconnected ends of the variocoupler rotor (which now happens to be the brass screws)

be cut and beveled neatly around the edge on the front side.

This disc should have a 3/16-inch hole drilled thru its center so it will fit snugly onto the projecting end of the shaft.

The beveled edges should have calibrations or notches cut into them something similar to the markings on a beveled ruler. Readings are taken from these markings by comparing with a similar line or mark on the panel. To make the markings more clearly visible the notches can be filled with white enamel. This filling should be put in before varnish or shellac is applied, as the varnish can be scraped from these places after it is dry. A thin paper washer slightly

fastened. (Figure 9 gives an idea of how the switch should be assembled.)

Completing the Connections

The connections are completed when the bolt in the center of the switch is connected to the binding post marked "Ground."

The variable condenser is used in tuning. Very little need be said about this part, as it is best to buy it complete or at least the manufactured parts ready to be assembled.

Any type of variable condenser will do, if it has a maximum capacity of about .001 mfd. (one thousandth of a microfarad) and there is nothing difficult about attaching a condenser to the set as they are provided with means for attaching them to either the panel or the base of the cabinet.

In the next article we will describe the detector and its parts.



Seed Corn Tips

THERE should be free circulation of air around the ears while they are drying.

Corn should not be dried in the direct sunlight.

Poorly dried corn will be much lower in germination.

Artificial heat or kiln drying quickly expels the excess moisture from the ears and prevents injury by freezing.

Kiln-dried seed corn has the greater vigor and vitality.

Do not overheat the corn while it is moist.

Partially dried corn should not be exposed to zero weather.

After drying, corn should be stored in a dry room which is free from rats and mice.—R. A. MOORE, University of Wisconsin.



Fall Freshening Best

COWS that freshen in the fall not only lead in production of milk and butterfat, but also produce more income over cost of feed than cows freshening at any other time of the year, according to Horace M. Jones, extension dairy specialist at South Dakota State College.

"A thoro study of 10,870 cows in 64 cow testing associations of the United States, as reported in a United States Department of Agriculture bulletin, reveals the fact that the average fall freshening cow produced 6,689 pounds of milk containing 268 pounds of butterfat; the winter freshening cow 6,439 pounds of milk and 258 pounds of butterfat; the spring freshening cow 5,941 pounds of milk and 236 pounds of butterfat; and the summer freshening cow 5,842 pounds of milk and 236 pounds of butterfat, respectively," he says.

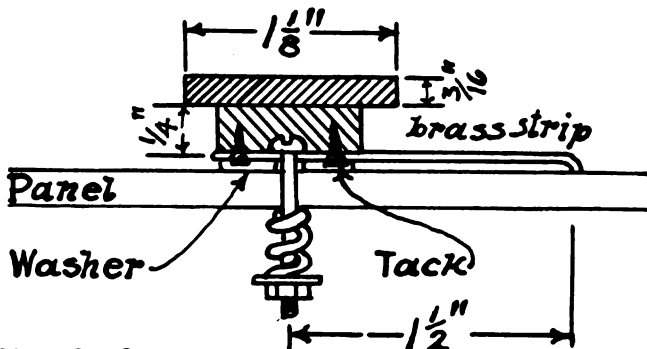


Fig. 9, Cross section of switch showing how knob and bolt are joined to brass strip

should be connected to the top binding post in the right-hand end of the panel. The other end of the variocoupler rotor should be connected to the loose end of the stator winding of the variometer marked "Grid." The loose end of this grid variometer rotor winding is connected to the second binding post from the top.

The binding screw leading from the stator of the plate variometer is connected to the bottom post in the right-hand end of the panel, and the loose end of the rotor to the next post.

This just about completes the work of the amateur on the tuner, as the remainder of the parts should be purchased ready made. The condenser which is used in tuning can be bought very reasonably and is all ready to be attached to the base or panel as desired. The dials which beautify the set very much are also reasonable in price and very hard to make. Plain little knobs and pointers can be used. The switch can be bought for a few cents and is also very hard to make.

The Dial

For the benefit of those who desire a beautiful set and haven't the money to spend on dials, a working idea for the construction of these parts will be given.

Four discs of wood about three-sixteenths of an inch in thickness and two and one-quarter inches in diameter should

smaller than the dial should be slipped on between the panel and dial.

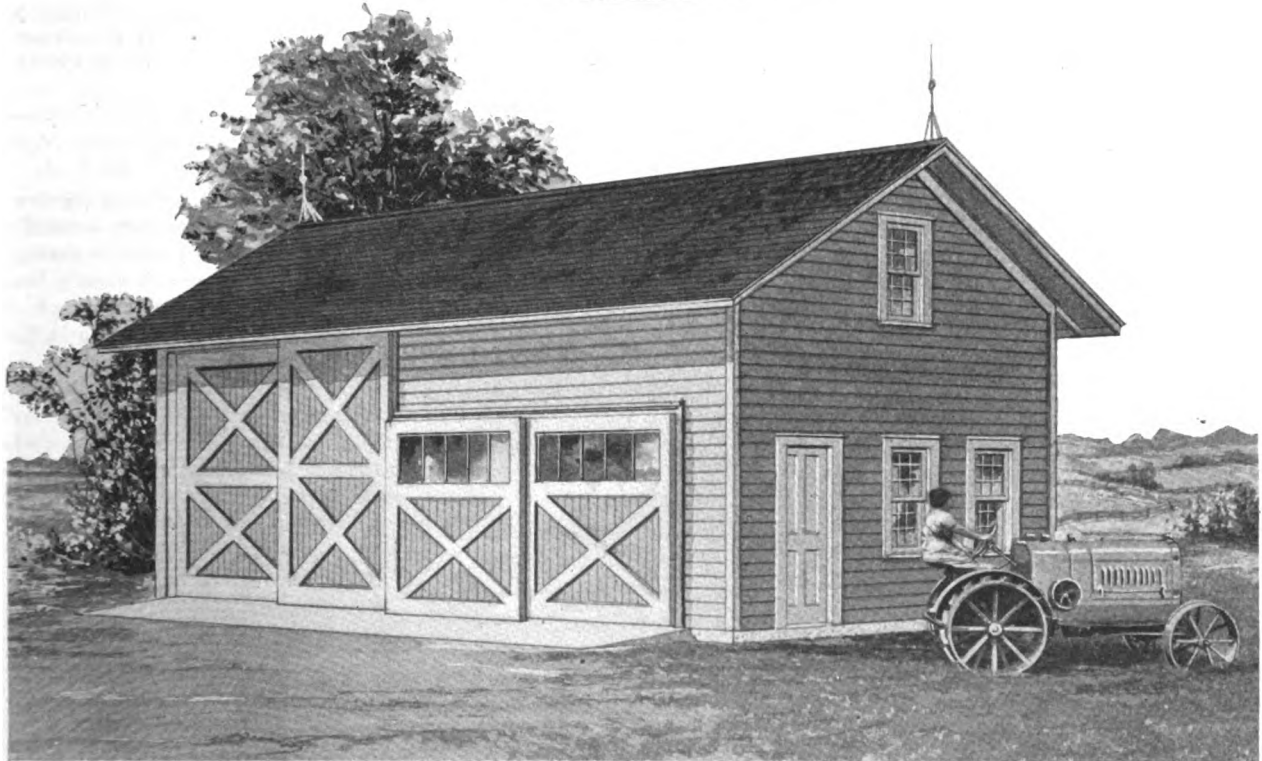
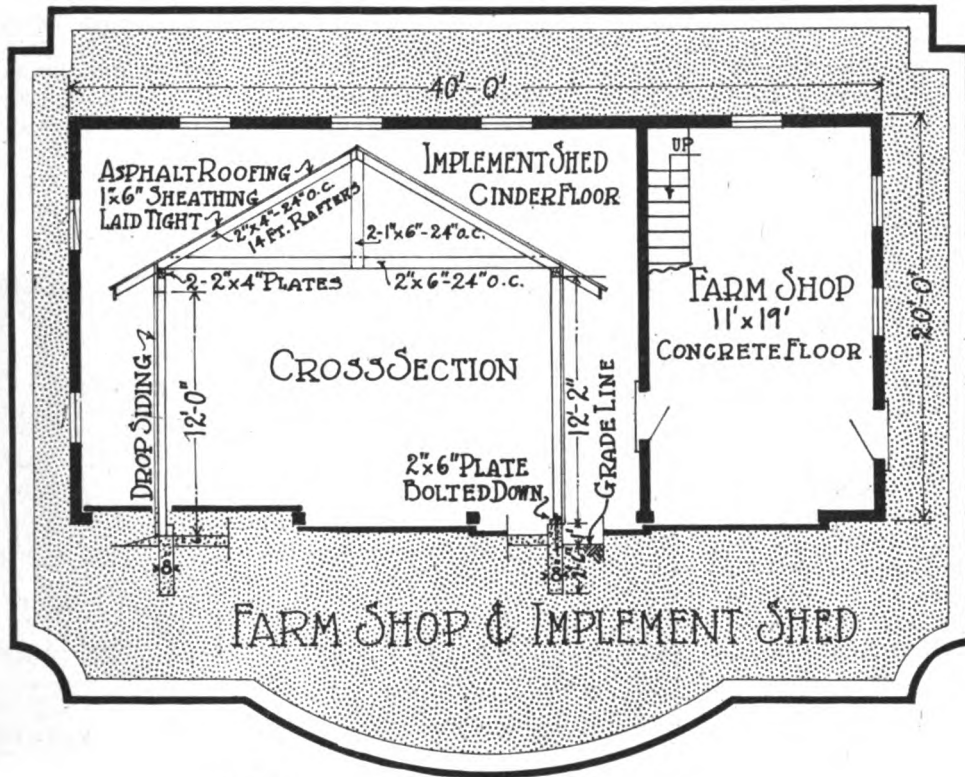
Now a ring of wood seven-eighths of an inch in diameter and one-quarter of an inch in thickness must be whittled out and fitted snugly on the axle and fastened to the dial with pins. The projecting end of the dowel should now be cut off even with the outer edge of this circular wooden ring and a small disc three-sixteenths of an inch thick and 1 1/8 inch in diameter can be fastened to the wooden ring.

When this is finished the dial can be fastened securely to the axle by running a pin down thru the wooden disc and into the dowel. (Figure 8 shows a complete dial and knob.)

The Switch

This part can be made by fastening a strip of springy brass to a wooden knob of the same size and shape as that used for the dials. The brass strip used must be long enough to press firmly against the switch points as it swings around. The brass strip with the knob is held tightly against a brass washer which rests against the panel. The whole is held firmly in place by a long brass bolt. This bolt should be run thru a hole in the large end of the spring before it is fastened to the knob. On the inside of the panel a small coil spring is slipped over this bolt and the nut screwed on and

MECHANICS BUILDING DESIGNS



FARM SHOP AND IMPLEMENT HOUSE. Combining under the same roof the implement storage and farm workshop makes it convenient and comfortable for the owner and his help to spend many profitable hours overhauling the farm equipment during the quiet time in winter. A good building of this kind is shown in the above design. The building is of frame construction, set on a concrete foundation and has a concrete floor. The farm shop is 11 by 19 feet, and the implement storage 28 by 19 feet. Sliding doors in both shop and storage sections make it comparatively simple to get the machines into the shop for repairing and overhauling. Included in the floor plan is a cross-section, showing how the building is framed and the dimensions of the materials required. This building is an economical one to build.

An Acre Keeps a Family

Chinese Use Crude implements, But They Know How to Maintain Soil Fertility and Produce Big Crops

By C. O. LEVINE, of the Canton Christian College

[EDITOR'S NOTE.—This is the second of two installments of Mr. Levine's article. The first installment appeared in the October issue.]

RICE is the principal grain crop grown in southern China, and it holds an important place in the diet of the Orientals. It is eaten with every meal, and is considered as indispensable in the diet as is wheat bread with most Americans and Europeans. In the northern half of China, wheat, barley, millet, kaolong and field corn are the important field crops. These grains are used both as human food and as feed for farm animals.

Of fruits, vegetables and useful trees and shrubs, China has a great number of varieties when compared with other nations. Practically every economical fruit grown in America is grown in China, and many others, of which we know very little or nothing, are common in that land. For a number of years, plant explorers sent out by the United States Department of Agriculture have collected seeds and plants that give promise of making good in the states. These are being tried out at various seed and plant introduction stations maintained by the department. Literally thousands of varieties of seeds and hundreds of varieties of plants from China have thus been introduced, many of which have become established in commercial way, while others are still in the experimental stage. The results of recent plant introductions from China have led Dr. David Fairchild, Agricultural Explorer in Charge for the United States Department of Agriculture, to say: "We have come to look upon China

as a 'gold mine' of plant possibilities and to realize that an agricultural study of its crops and cropping systems must be made much more extensive than anything done heretofore . . ."

Few people realize what a debt we already owe China for many of our com-

Another fruit, the stock of which has recently been introduced to America, is the seedless pumelo from Amoy, China. This is a citrus fruit, about six inches in diameter with free skin, easily separated lobes, seedless, and is as sweet as the sweetest orange. Our grape fruit is



In the Dairy Barn at the Canton Christian College, Canton, China. Note the modern dairy barn equipment. The native Chinese cows only give from one to five quarts at a milking, but the milk is very rich, running high in butter fat.

mon crops, especially those in the horticultural classes. Our peach, which comes to us from Europe, is a native of western China. The so-called Japanese persimmon is probably a Chinese, and not a Japanese, fruit. This persimmon is as large as a base ball, is seedless, and has a delicious flavor. In comparison with it, our little native persimmon is like a sour crab compared with a juicy Jonathan.

a close relative of the pumelo, but when compared with it in flavor and quality it is but a poor relative, of the fruit.

We are indebted to China for the soy bean, which came into such demand as a part of the doughboy's ration during the recent war, and which is rapidly becoming an important crop for livestock. The soy bean is a most useful crop in China. A great variety of products are made from it, which, in nutritive values, according to authorities, are similar to milk and its products. In fact, soy bean products, such as soy bean curd, soy bean milk, and soy bean cheese, have held the same important place in the diet of the Chinese as has milk in the diet of people of America and Europe.

The opinion often held by those who have never been in China is that every square mile of that land is under cultivation. Such, however, is not the case. China is a very mountainous country. Roughly, four-fifths of her area is mountain land, fit only for the growing of timber or for grazing. The natural forests have almost disappeared from China, while livestock grazing is only a small part of what it might be, and what it will be, when there is a greater demand for Chinese beef, and the mountain and grazing areas are policed so as



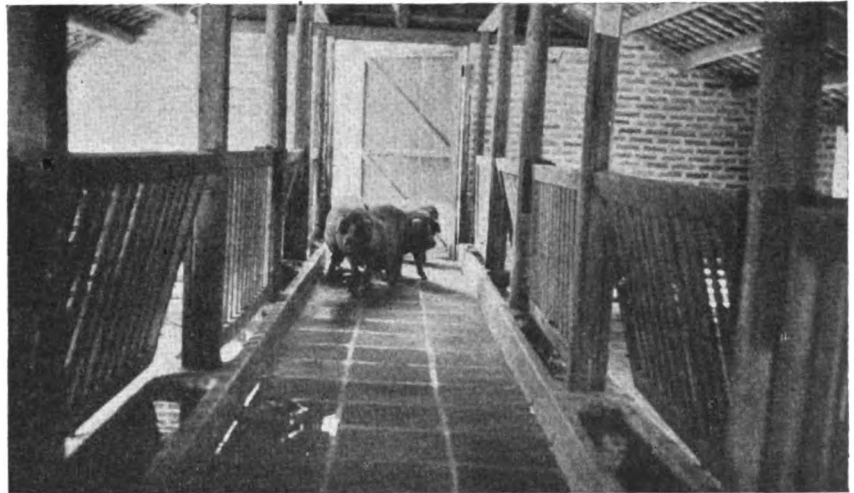
Exterior View of the Canton Christian College Dairy Barn and Some of the Native Cows

to afford protection from brigands.

Only about one-fifth of China is under cultivation, and it is on this portion that her four hundred million people live, eight-tenths or more of whom are farmers. China is considerably larger in area than the United States, but the area of her cultivated land is much less, being considerably less than the area drained by the Mississippi River.

Nearly all the farm land has been reduced to a level so as to make irrigation possible in order to secure the maximum production.

The forest have been almost entirely removed from the mountains and hills. This deforestation has resulted in the silting up rivers and canals by heavy washing rains, until today rivers and canals everywhere have beds higher than the surrounding country. Dykes have been built to help keep the streams in their courses. It is estimated that there are nearly two hundred thousand miles of dykes in China. These dykes are from four feet high and six feet wide to 30 or more feet high and proportionately wide. When they break, as they do frequently each year during the rainy season, the level country is flooded, in many instances, over thousands of square miles. If the break and subsequent flood occurs just before the first crop of rice, which is the chief crop in the lower fields, is harvested, the crop is lost, and the water does not recede in time to permit the planting of the second crop. Thus two crops are lost, which is a serious proposition when we consider the size of the average farm. Starvation and suffering occur such as we are entirely ignorant of in America. The big problem for agriculturists and engineers and on which expert engineers are now working, is that of flood control. Dykes are in need of repair and strengthening. Channels should be deepened and new ones built, and reservoirs made on the upper slopes which will hold part of the



Interior of the Hog House at Canton Christian College. The floor is of tile and the troughs of concrete.

water back in the flood season, and which can be used as source of water supply for growing crops during the seasons of less rainfall. These measures, together with general reforestation, should help to prevent floods and greatly improve the economic situation of the Chinese farmers.

The American farmers have much which the Chinese farmers lack and need, in the way of improved farm machinery and modern methods of breeding and improving farm plants and animals. The American farmers can, in turn, learn much from the experience of her Oriental neighbors across the Pacific, whose four thousand years of practical experience as farmers have taught them many things which we are only just beginning to learn in America.

We have already received from China a large portion of our cultivated fruits and ornamental plants, but we have only just begun to receive from her unlimited store of varieties.

"America lacks and needs more intensive agriculture, while China lacks and

needs more extensive agriculture. Each has enough and to spare of what the other lacks and needs. In point of agricultural development, each has something to give and something to take."



Copper Carbonate for Smut

A SIMPLE, safe and sure method of eliminating smut has been found in the copper carbonate treatment, according to Dr. Arthur E. Evans, associate professor of agronomy at the South Dakota State College. An experiment has been carried on at the South Dakota experiment station for the past year to demonstrate the best method of treating for this disease.

Formaldehyde and copper carbonate were used in the experiment. Three plots were planted, one to grain treated with formaldehyde, one to grain treated with copper carbonate, and the third run as a check plot with no treatment. The grain used was extremely smutty, having been infected by hand with a particularly large amount of spores.

The grain which received no treatment showed a stand of 98 per cent, with an infection of 90 per cent of smut. The grain treated with formaldehyde showed no smut, but the stand was decreased to 60 per cent, showing that formaldehyde does lower the germination of wheat. The grain treated with copper carbonate showed no smut and 100 per cent stand.

Copper carbonate is a new disinfectant which has recently come upon the market and is the result of recent experimental work. This disinfectant comes as a dust, two ounces of which added to a bushel of wheat is sufficient to disinfect it. The disinfectant is added to the grain and the grain stirred so that it is thoroly mixed with the disinfectant. It is then ready to plant.



Using an American-Made Two-Horse, or Rather Two-Cow, Mower on the Grounds of the Canton Christian College.

Seventy-Five and Going Strong

Mrs. Sam Hoppess Cares for Her Big Ohio Farm Home and Her Family and Finds it Comparatively Easy Because She Has an Efficient Servant in Electricity

By F. J. St. JOHN

A COLORED man who called on a certain state-city employment agent for a job was advised that they wanted a man at the Eagle Laundry. "Boss, I shuah would like to have dat job," mourned the colored man, "but I is nevah had no experience washin' a eagle."

Sam Hoppess has never had an experience washin' a baby elephant, either, altho the concrete watering trough in his barnyard is big enough to serve as a bathtub for that purpose.

Everything about the Hoppess farm, for that matter, is on the same out-size scale as that enormous watering trough. Big barns, big fields, big horses, bigness everywhere. Even that large, new-looking gambrel-roofed building that resembles a modern barn is not a barn, but a big grain elevator, built there on the Hoppess farm for their own convenience, and to enable them to handle their grain along lines that seem to them most up-to-date and profitable.

Fayette County, Ohio, has long had a reputation for its big farms and splendid farm homes and the Hoppes place perhaps does not stand out so prominently as it would in a community of more modest holdings. But it does stand out as a tribute to the thrift and industry of Sam Hoppess and his family, who have labored along with him to make the home a place of utmost comfort and convenience.

And in respect to those items of comfort and convenience, this home is ahead of many others in that community. This is because of the Hoppesses have called in electricity to insure the modern conditions which make homes comfortable and convenient, whether they are located in the country or the city.

Out between that big grain elevator and the barn is a small hollow-tile building, put there for the especial purpose

of housing the farm electric plant. This is a 110-volt plant of 3-kilowatt capacity, a plant large enough to furnish plenty of current for lighting all the farm buildings and power to pump the water and to run motors for a number of other purposes.

Lighting with electricity is in itself a considerable proposition there on the

group. That neat, six-room house of brick and stucco, in the foreground, is the tenant house. It is as modern and comfortable as anyone could desire, with electric lights from the farm electric plant and all the other features which are enjoyed in the big family residence away in the background. The neat, roomy barn behind the tenant house com-



Mr. and Mrs. Sam Hoppess on the Vine-Clad Porch of Their Modern Farm Home in Ohio.

Hoppess farm. Besides the light for the big farm house, there is light for all the barns and that big grain elevator, and for the splendid tenant house and barn which are entitled to a paragraph by themselves.

You can see these in the foreground of the picture of the farm-building

ples as fine a set of tenant buildings as one can find in many a long day's drive over any road he might choose to travel.

This home for the tenant is more elaborate, perhaps, than many would consider necessary. A more modest layout would probably be satisfactory in



General View of the Buildings on the Hoppess Farm. The house in the foreground is the tenant's, while to the left in the background in the owner's home.

The **HARVESTER COMPANY'S**

Newest Tractor

McCormick-Deering 15-30

Smooth-running, long-lived, economical! Years ahead of any tractor heretofore produced! Naturally it remained for the Harvester Company, with long time tractor and farm machine experience and with great resources, to bring out the one great epoch-making farm power value. The McCormick-Deering 15-30 stands in a field of its own—the logical tractor choice for the man who wants the best in modern-day farm power.

Ball and Roller Bearings at 29 Points

These dust-proof, quiet-running bearings relieve the McCormick-Deering 15-30 of all excess friction—at drawbar or belt work the power of the 4-cylinder, valve-in-head, kerosene motor is delivered without strain or drag. In fact, every unit of the new McCormick-Deering 15-30 has been designed for long life, economy, full power, and operating comfort.

The McCormick-Deering 15-30, like all Harvester tractors, is an all-purpose farm power plant. It is equipped with belt pulley, large steel platform, wide fenders, throttle governor, adjustable drawbar, reliable brakes, and removable angle lugs.

You will want to know more about this latest tractor achievement. Ask the McCormick-Deering dealer for complete details or write for our new catalog.

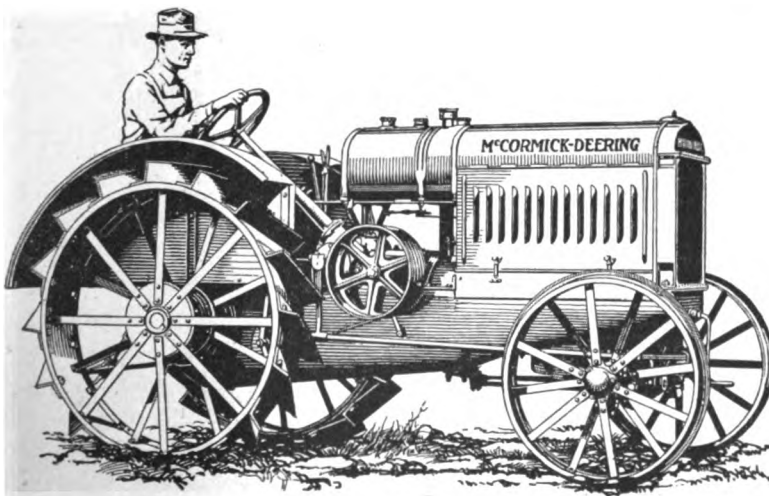
INTERNATIONAL HARVESTER COMPANY

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93 Branch Houses and 15,000 Dealers in the United States



**Three-Plow
Capacity!**

**Ball and Roller
Bearings!**

**Complete
Equipment!**

*The smoothest-run-
ning tractor ever
produced!*

the majority of cases. This home, however, has in it a suggestion that should be helpful to many who are having difficulty in keeping the right sort of tenants on their farms. And there must be some difficulty, else there wouldn't be as many houses standing vacant on our farms as one sees in driving here and there about the country. Generally, it may be remarked, these vacant houses are not well improved, not very inviting and not calculated to influence the tenant family to remain in the country and work on a farm.

This is not designed, however, as an argument for electric lights and bathrooms in the tenant farm homes, at least until the owner has these conveniences in his own home. Where the two sets of buildings are not too far apart it is usually an easy matter to serve both homes from one good plant. Where this can be done, it is a good investment to give the tenant home electric lights, and as many other electrical conveniences as possible.

That wasn't exactly true, what we said a moment ago, about everything being big, around the Hoppess farm. Mrs. Sam Hoppess is a tiny woman, looking tinier still, perhaps, amid the bigness of her surroundings. A slender, gray-haired little lady, she is in every sense the capable mistress of that home and unquestionably manages big Sam Hoppess and their grown, unmarried son as easily and completely as they declare she does.

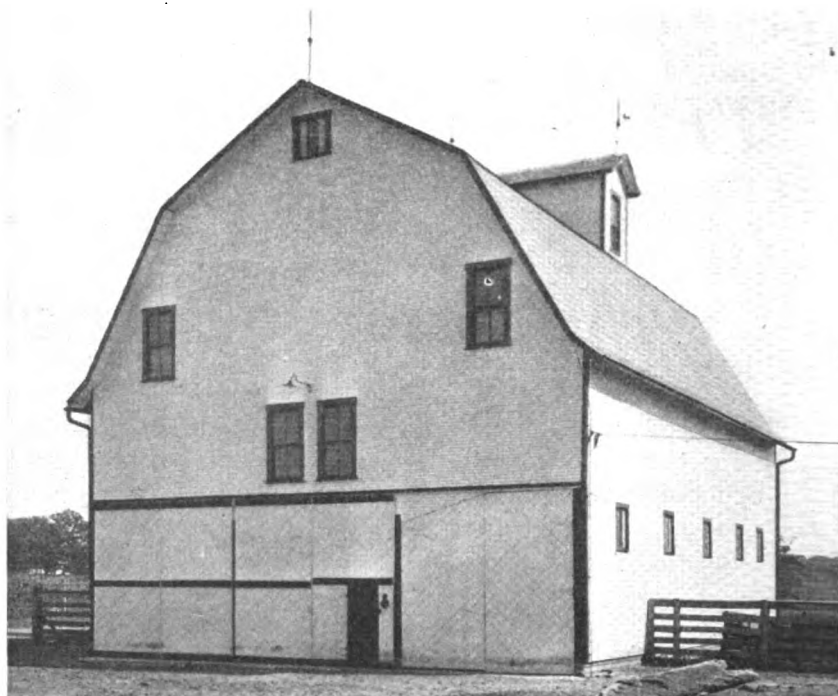
Her seventy-five years, she says, are no particular burden as far as caring for the home and her housework is concerned. She agrees that the electrical equipment and running water are two big factors in making her life easier—easier by far, she emphasizes, than it was during the fifty years or more of her life as a farmer's wife, before she got these modern conveniences.

She laughed a little at our question, "Do you run the vacuum sweeper?"

"Why not?" she asked, in turn, and promptly proceeded to demonstrate that she was a perfectly competent chauffeur-ess for any vacuum sweeper that ever created a vacuum.

She is on equally familiar terms, she declared, with the other electrical household equipment which the home affords, such as the electric washer and electric iron.

These appliances, the electric washer and electric iron, with the vacuum sweeper, ought to be a part of the equipment of every home where there is electricity. There are other appliances, to be sure, which are valuable for the service they render, but these three have to do with three of the big jobs of the family, and they are jobs in which the housewife most always has an important part.



Combination Crib Granary and Feed Barn on the Hoppess Place. It is equipped with electric lights and electric motors to operate the power elevator.

And you can't deny that electricity does take the hard work out of each of these three jobs, the washing, ironing and sweeping, pretty completely. Consider a washday with a modern electric washer, as compared with the one where the washboard, or even a hand-power washer is used. What woman would not rather have an electric motor do the work of washing and wringing the clothes, the hardest part of the washday

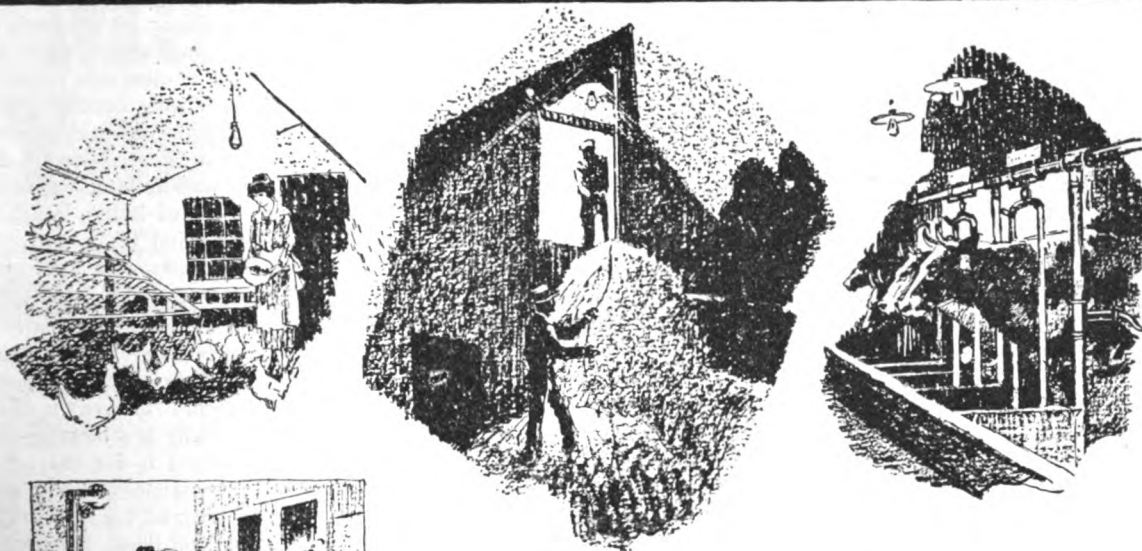
job, than to rub those clothes out on a board, or even work the crank or lever of a hand-power washer. Either of these old methods is a slow, laborious process which requires her entire time and energy to get the clothes clean?

Then take ironing. The ordinary ironing day starts off with a great basket of clothes dampened and folded, ready to be pressed, garment by garment and finally placed in piles and stacked away



Altho 75 Years Old Mrs. Hoppess Finds it Easy to Do Her Housework Because She Has Electricity To Help Her.

Certified Electric Service



Running water in kitchen and bath-room provided with power from Willys Light is a convenience that is considered indispensable by farm housewives.



Ample power for operating the separator, the churn and dairy equipment is provided by Willys Light. Handling the dozens of small chores with electricity are priceless advantages.

Willys Light Pays Its Way

Everywhere on the farm—wherever light and power are needed, WILLYS LIGHT Certified Electric Service is sure to return penny for penny and dollar for dollar, every cent of your original investment.

Besides for use in all the chores—pumping the water—running the separator—churning the butter—and operating the electric washer and iron—it floods the house, the barns, the sheds, the garage with bright, cheerful, safe light, at the touch of a button.

WILLYS LIGHT Certified Electric Service provides smooth, steady electric power whenever you need it. It is permanent, dependable, sure and lasting. Identically the same service as is provided to the city family.

You can't count the convenience in dollars and cents. Money won't buy mother's health and peace of mind, nor a contented family—a healthy, happy group enjoying the conveniences and pleasures city folks enjoy.

You can easily afford WILLYS LIGHT. You can't afford to be without it. The operating cost is a few cents a day, and it requires less attention than your automobile. You can buy WILLYS LIGHT Certified Electric Service and have it immediately—right now—on your own terms. Take as long as twelve months—a whole year—to pay if you wish. The terms cover all—complete installation—ready to use—even the freight.

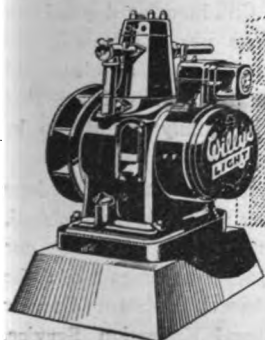
A remarkable organization of painstaking, conscientious dealers are at your service. One near you will be glad to give you Free Estimate of an outfit that will meet your requirements.

Write us for free catalog and complete information. Address Dept. 905.

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Builders of over 3,000,000 electric lighting systems.



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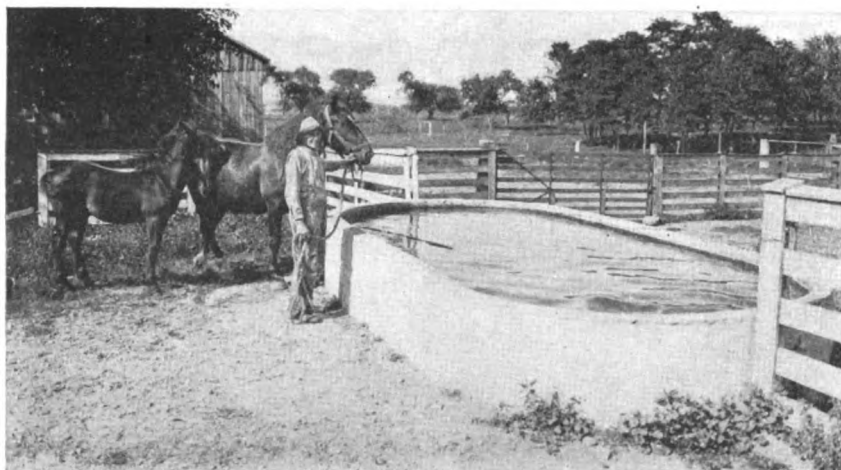
There is a size to fit your needs—as much or as little power as you may require and terms of payment you can afford.

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

WILLYS LIGHT

Power and Light with the Quiet Knight

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There Is Plenty of Water Everywhere on the Hoppess Farm, Pumped by Electricity.

against the needs of the various wearers. Those of us who have never worked our way down thru a big basket of folded clothes, on ironing day have no conception of the magnitude of the job. And I'm very much of the opinion that many a husky farmer who would take a team of horses or a tractor and go merrily along with the plowing of a sixty-acre field, without a wobble, would be a nervous wreck long before he had ironed his way half thru a basket of clothes on ironing day.

But your housewife never falters. She has a battery of six or eight-pound flat-irons kept hot on top of the kitchen range or over a hole on the oil stove. And they're hot, too. You can hear them spit and sizz when she touches them with the tip of a moistened finger. She irons away patiently, every now and then carrying a cooled iron back to the stove and returning with a fresh, hot one. Down and down into that big basket she works her way—ironing awhile, then changing irons until by and by comes the reward for her toil. The basket is empty and the week's ironing hangs on the clothes-rack, freshly pressed and sweet-smelling, all ready to be mussed up and soiled again by folks who do not appreciate, nearly enough, the painstaking toil and effort a patient wife and mother has given in this labor of love for her family.

Any household device that will shorten the job of ironing and relieve the housewife of even a part of the hard work is very much worth while. The electric iron is such a device and any home with just a moderate supply of electricity can have one.

Housewives who use them declare, in many instances, that the use of the electric iron cuts the time of ironing in half, for there is a constant even heat, and proper temperature, without any changing of irons, without any trudging back and forth from stove to ironing board.

Less effort—and less time. No hot

fire to keep up in a kitchen range or other stove, no heated kitchen. Ironing board set up to any convenient corner of a pleasant room or porch. It is a modern device, the electric iron, much appreciated by every housewife who uses one and due to come into increasingly popular favor as the use of electricity becomes more widespread.

We mentioned the vacuum sweeper. What a practical, common sense adaptation of electricity it involves! What an improvement is vacuum cleaning over the old way of sweeping with a broom!

Some of the first evidences of being "played out" comes to the housewife when she starts wielding a broom on one of her regular "sweeping days," and she finds she cannot keep up that steady, vigorous fight against dirt as she once waged it. The twisting, swinging motion required in sweeping with a heavy, brush broom may be good exercise, when employed by a strong, vigorous body, merely as exercise. It isn't particularly healthful, however, after fatigue sets in, or when there is some weakness present which the sweeping motion stirs up. It's a whole lot better to do the sweeping with an electric vacuum sweeper and get the exercise in some more normal, wholesome fashion.

The matter of sweeping raises another question of health. Sweeping with a broom, it has been pointed out, again and again, stirs up more or less dust into the air, with whatever germs may be lurking about, waiting to be put into circulation so that they may do as much damage as possible. They get a fine opportunity when they are kicked up into the air by the thrust of a broom, then breathed into the lungs of members of the family, little folks and big ones. There's been many a husky disease germ that got its chance at raising a disturbance just because an old broom stirred it up into the air in time to find lodgment in somebody's physical system.

Contrast this with the action of the

electric vacuum sweeper. Here Mister Disease Germ, with all other forms of dust and dirt, is sucked safely away inside an airtight bag. He is dumped out on a newspaper, on the back porch, folded safely away and probably burned in the furnace or otherwise properly disposed of. He isn't floating around in the air of the home, seeking whom he may lay low with some dread disease. The electric vacuum sweeper, then, is a right fair form of health insurance, as well as a time and labor-saver. Every housewife who has ever used one will testify to that.

Mrs. Sam Hoppess will testify to it, and to the advantages of all the other electrical appliances with which her home is blessed. "Blessed" is the word to use. Electricity is a blessing to every home that adopts it for the service it renders so completely, when given a fair chance. A need for this service has existed for a long time. Electricity provides this service as no other force, no other agency can do and the family that adopts electricity is most certainly inviting contentment and satisfaction to enter their home and abide there.



Dairying Is Profitable

NO matter what trials beset agriculture, dairying is and will always continue to be one of its profitable and its most secure ventures. The reasons are not far to seek. Ever since the days of primitive man the human race has used large proportions of animal food. As population presses, meat is partially replaced by vegetables in the diet. Nowhere, however, has animal food been entirely abandoned. Since the dairy cow is the most economical producer of human food from the grain and roughages of the farm, the increased consumption of dairy products is coincident with the increase of human population. This is one vital reason why dairying must continue.

"Of all the enterprises in which men engage, livestock husbandry is the most alluring and the most enjoyable.

"The cow has been most appropriately designated the foster mother of the human race. Childhood's dependence upon milk for its normal growth and healthy development is so absolute and so vital to our national welfare that dairy farming is rapidly coming to be the one indispensable.

"Hence, dairying cannot be overdone and the dairy cow will never be replaced, neither in the nurture of the race nor the fundamental economics of the farm.—K. L. HATCH, assistant director of the Agricultural Extension Service, University of Wisconsin.

Make Your Tractor Your Willing Servant

Chart of Recommendations

Trade Name	Motor Oil	Trade Name	Motor Oil
Akron.....	H.	Magnet B.....	H.
Allis-Chalmers—All Models.....	H.	Mark VI Once Over.....	H.
Allied.....	H.	Midwest.....	E. H.
All Work—Both Models.....	H.	Minneapolis, 12-25 and 17-30.....	H.
Andrews-Kinkade.....	E. H.	Minneapolis, 22-44 and 35-70.....	E. H.
Appleton.....	H.	Mogul.....	H.
Armington.....	H.	Mohawk.....	H.
Aultman-Taylor, 22-45.....	E. H.	Monarch-Industrial.....	H.
Aultman-Taylor, 30-60.....	E. H.	Nelson Junior & Senior.....	H.
Ayltman-Taylor, 15-30.....	E. H.	Ohio.....	H.
Automotive.....	H.	Oil Gas, 20-42.....	E. H.
Avery Model C.....	H.	Oil Gas, 25-50.....	E. H.
Avery, 8-16, 12-25, 25-50, 14-28, 18-36, 40-65.....	E. H.	Parrett.....	H.
Avery Track Runner.....	H.	Peoria.....	E. H.
Bates.....	E. H.	Pioneer, 18-36 and 30-60.....	E. H.
Bates Steel Mule—All Models.....	H.	Flow Man.....	H.
Bear.....	H.	Porter.....	H.
Best Tracklayer, 30.....	E. H.	Port Huron.....	H.
Best Tracklayer, 60.....	E. H.	Prairie Dog, 10-18 and 15-30.....	H.
Big Farmer.....	E. H.	Quadpull.....	H.
Big Four, E-B.....	E. H.	Reed.....	H.
Biltwell.....	H.	Reliable.....	E. H.
Boring.....	H.	Rex.....	H.
Burnoil.....	E. H.	Rumely Oil Pull, 12-20.....	E. H.
Capitol—All Models.....	E. H.	Rumely Oil Pull, 16-30.....	E. H.
Case, 10-18 and 15-27.....	H.	Rumely Oil Pull, 20-40.....	E. H.
Case, 22-40.....	E. H.	Rumely Oil Pull, 30-60.....	E. H.
Case, 20-40.....	E. H.	Russell "Big Boss," 20-35.....	E. H.
Cletrac, 9-16 and 12-20.....	H.	Russell "Giant," 30-60.....	E. H.
Coleman.....	E. H.	Russell "Little Boss," 15-30.....	H.
Common Sense.....	H.	Russell "Junior" 12-24.....	H.
Dakota.....	H.	Sameon Model M.....	H.
Dart Blue "J".....	H.	Savage A.....	E. H.
Depue.....	H.	Shawnee, 6-12 and 9-18.....	H.
Dill Harvesting.....	M. H.	Shelby Model C.....	E. H.
Eagle, 12-22 and 16-30.....	E. H.	Shelby Model D.....	E. H.
E-B, 9-16 and 12-20.....	H.	Square Turn.....	E. H.
E-B, 16-32.....	H.	Stinson Heavy Duty.....	H.
Farm Horse.....	E. H.	Titan.....	H.
Farquhar, 15-25.....	H.	Topp-Stewart.....	H.
Farquhar, 18-35 and 25-50.....	H.	Toro.....	H.
Fordson.....	H.	Townsend—All Models.....	E. H.
Flour City Junior, 20-35.....	H.	Traylor.....	H.
Flour City, 30-50 and 40-70.....	E. H.	Triumph.....	E. H.
Fox.....	E. H.	Trundar.....	H.
Four Wheel Drive Fitch.....	E. H.	Twin City, 12-20 and 20-35.....	E. H.
Frisk, 12-20.....	E. H.	Twin City, 40-65.....	E. H.
Frisk, 15-28.....	H.	Twin City, 60-90.....	E. H.
Good Field.....	H.	Uncle Sam—All Models.....	H.
Grain Belt.....	H.	Vim.....	H.
Gray.....	H.	Wallis.....	H.
Great Western.....	H.	Wallis Cub.....	H.
Hart-Parr—All Models.....	E. H.	Waterloo Boy N.....	H.
Heider—Model "C".....	H.	Wellington, 12-22 and 16-30.....	E. H.
Heider—Model "D".....	H.	Westmore.....	H.
Holt Caterpillar, T-35.....	H.	Western.....	E. H.
Holt Caterpillar (5 Ton).....	H.	Wheat.....	E. H.
Holt Caterpillar (10 Ton).....	E. H.	Whitney.....	E. H.
Holt Caterpillar (15 Ton).....	E. H.	Wichita.....	H.
Huber Light & Super Four.....	H.	Wilson.....	H.
Illinois Super Drive, 18-30 and 22-40.....	E. H.	Wisconsin, 16-30 and 22-40.....	E. H.
Indiana, 5-10.....	H.	Yuba Ball Tread—All Models.....	H.
International, 8-16.....	H.		
International, 15-30.....	H.		
J. T.....	E. H.		
Keek Gonnerman.....	E. H.		
Kinnard.....	H.		
La Cross.....	H.		
Lauson, 12-25 and 15-30.....	H.		
Leader, 18-36.....	H.		
Leader, 12-18 and 16-32.....	E. H.		
Leader, 18-35.....	E. H.		
Leonard Four Wheel Drive.....	H.		
Liberty.....	E. H.		
Little Giant A & B.....	H.		
London Models, 12-25.....	H.		

N. B. For recommendations or grades to use in automobiles and trucks consult chart at any Standard Oil Co. (Indiana) station.

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WHEN the tractor is needed nothing can take its place in minimizing time and labor. But the tractor must be lubricated properly to keep it in prime working condition, and there are numberless parts to be considered. Guess-work invites disaster and a take-a-chance attitude may call a halt at the most critical period of the year's farming.

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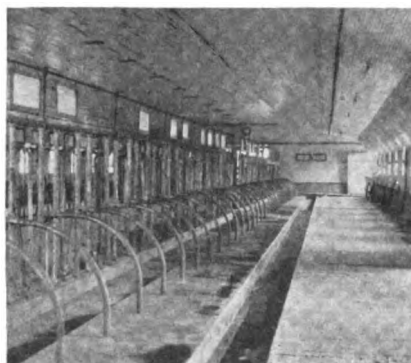
M. L.—Polarine Medium Light.
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H.—Polarine Heavy.
E. H.—Polarine Extra Heavy.

How to Use Concrete on the Farm

Some Pointers that Will Help in All Classes of Construction Work

By IVAN D. WOOD

IT was Joseph Aspdin, a brick layer of Leeds, England, who, in 1824, discovered that clay and lime when properly mixed and heated would produce a kind of cementing material. When hardened, it so much resembled a grade of limestone then quarried on the Isle of Portland that he gave his cement the name "Portland." This early cement, however, was not much like the portland cement of today. Not until 1845 was cement, as we now know it, produced. At the present time the farm trade consumes millions of sacks while the wide distribution of natural beds of sand and rock makes concrete one of the popular farm building materials. It is the purpose of this article to point out some of the



Concrete Floors in Dairy Barns Permit the Easy Construction of Gutters and Provide a Method by Which Sanitary Stall Equipment Can Be Permanently Installed.

about right for most farm uses. I have seen several failures caused by using rotten stone and cinders. A good solid crushed limestone is to be preferred. Very often the rock is omitted from a mixture, sand and cement only being used. It may be a surprise to some to know that rock adds much to the strength of a mixture. The Kansas State Agricultural College conducted some tests which indicate that it is economical to pay as much as \$2.50 per yard for stone rather than to use enough extra cement to get the same strength with



Concrete Has Come Into General Use for Foundations for Farm Buildings.

causes of failure in concrete construction and to discuss some of its uses.

Materials

Any brand of portland cement in the market today will be found satisfactory for farm use. If lumps are found in the sacks when opened, the cement has been damp, probably having been stored in a place where water dripped upon it. The mistake of storing sacked cement on concrete floor is sometimes made. I have seen at least one-fourth of each sack spoiled in this way. The dampness, of course, does the trick. These lumps should be screened out and thrown away. Never put them in the mixture unless they can be easily pulverized. If kept dry, cement can be kept for an indefinite period without injury.

America has plenty of sand, but unfortunately much of it will not do for cement work. Many failures are due to dirty, fine sand. Generally speaking, clean, coarse sand with some fine particles mixed

with it will make a good dense concrete if proper mixtures are used. If fine sand is the only kind available, much richer mixtures must be made to secure a fair degree of strength. I saw a water tank which had been made from a weak mixture of fine sand and cement, one part cement to six parts sand, to be exact. The sides were crumbling badly and water was seeping thru in a number of places. A simple test to determine the amount of dirt in sand may be made by filling a quart size fruit jar with 4 inches of the sample. The jar is then filled nearly full of water, the lid screwed on and the jar shaken vigorously for some time. The contents are then allowed to settle and if more than one-fourth of an inch of dirt shows over the sand, there will be danger of using that particular grade of sand for any concrete work.

Broken stone is used for the coarser material. Pieces 1 inch in diameter are



Proper Foundations Are Necessary for the Cement Walks, or They Will Heave and Crack as this One Did.

cement and sand only. Not long ago a farmer used bank-run gravel or sand and gravel mixed naturally as it comes from the pit for an important job. As is usually the case there was too much gravel and not enough sand in the natural mixture and a poor job resulted. The sand and gravel should have been screened apart and remixed to give the proper proportion as is described later.

Failures

Most all concrete failures are due to improper mixtures. One fact which must be borne in mind is that cement and plenty of it must be used. Such mixtures as one part cement to ten parts sand are absurd and can only meet with failure if used where strength is required. One part cement, two parts sand and four parts of rock gives a dense, strong concrete for general farm use. Foundations may be slightly leaner, say, 1:2½:5, but any such construction as reinforced concrete columns, thin walls,



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and water-tight tanks should be made as rich as 1:1½:3.

It has been customary to make mixtures as wet and sloppy as possible; so that the concrete would run into the forms easily. Some very recent tests indicate that when an excess of water is used, the strength of the finished construction may be reduced materially below what it might have been if just enough water had been used to make the mixture run into place.

Reinforcing

Steel rods and woven wire are much used for reinforcing. Pieces of broken

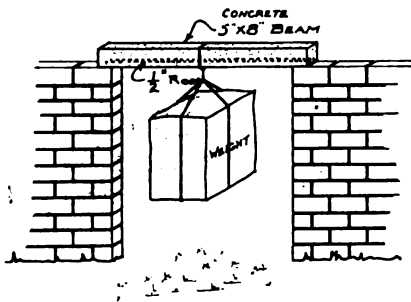


Fig. 1. Showing the Principle of Reinforcing Concrete.

castings, corn planter wire and old rusty gas pipe are sometimes substituted with dire results. Not long ago I saw a large water tank cracked entirely in two and rendered absolutely useless, because of lack of reinforcing. Most failures of concrete construction are caused from improper placing of steel or the entire absence of it. Cracked door lintels, broken water tanks, bursted slabs and the like may all be seen every day. Fig. 1 shows the principle in reinforcing concrete. Suppose a beam 1:2:4 concrete 5 by 8 inches in size were laid over the supports 6½ feet apart, as shown and a load applied at the center. With no reinforcing the beam would break at about 700 pounds; with two ½-inch steel rods at the center it would break at about 5,400 pounds, but with two ½-

inch steel rods properly placed at 1 inch from the bottom the breaking load would probably be about 8,900 pounds, or more than twelve times as much as with no rods at all. The reinforcing must always be placed where it receives the strain. In a slab floor 4 inches thick the rods are run both ways and are placed near the bottom of the slabs, never in the center or top. It is often convenient to use large pieces of iron, such as railroad rails for reinforcing. I know of two instances where rails were used in the concrete floors of elevated water tanks. Both tanks leak because of a crack which formed below the rail. Heavy pieces of steel in thin slabs almost always give this effect and consequently small rods ½ inch to ¾ inch in diameter are better.

Foundations

Any concrete structure should be laid on solid foundation. Much of the cracking of walls, tanks, floors, sidewalks and even stucco is due to unequal settling. The picture shows a walk which was placed on an insecure foundation. The edges settled while the center did not. Cracks formed, water enters and freezes causing further destruction. If a floor must be built on "made ground," the dirt should be thoroly wet and packed before any concrete is laid upon it. Concrete should not dry too rapidly. Fresh work is better if protected from sun and wind by a covering of moist earth, straw, or canvas.



Digging Potatoes Two Rows at a Time

THE fact that machine-dug potatoes bring a higher price than those harvested by hand is interesting many

farmers. When selling prices drop close to and even fall below actual production costs, there is a special effort to secure relief by using modern labor and cost saving equipment. Machine-dug potatoes are "preferred," and a bonus is paid for spuds handled this way. When manually dug, the fork's tines often pierce the tubers. This lessens the value of the potatoes thus punctured, a circumstance that cannot occur when the mechanical digger is used.

A modern method of potato harvest is the use of a tractor pulling two machines, thus digging two rows at a time. This effects a great saving in time, labor and expense over any other method. One installation, which is typical, is that of a small tractor pulling two diggers, the connection being thru a special hitch. The arrangement is such that in addition to the regular steering device of the tractor, each machine operator is able to guide his own digger.

The tractor straddles one row, and the offset hitch allows each machine to follow a row. Guiding the digger by the operator is accomplished by a steering crank that, acting thru a screw and nut, moves the front of the digger from side to side as desired. The diggers at the front are supported by the cross member of the hitch, which in turn is carried on two caster wheels.

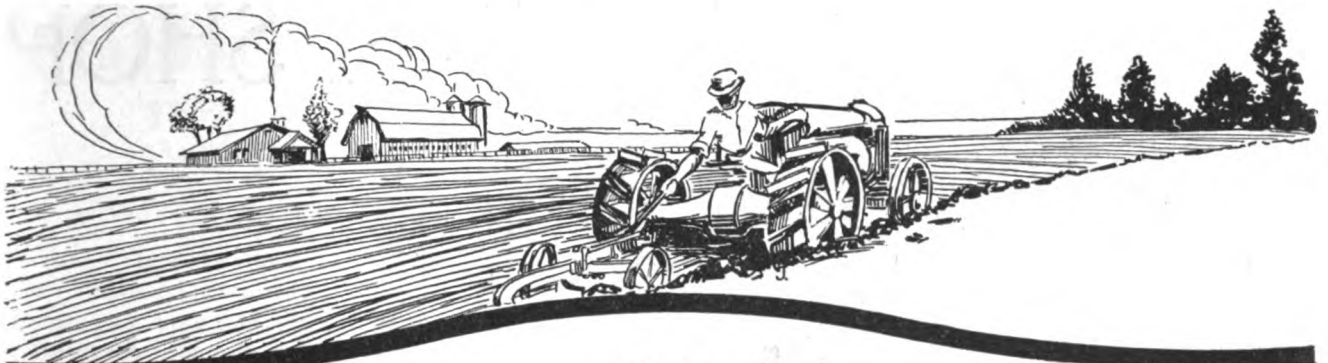
The action of a mechanical digger is very simple. A shovel passes thru the ground under the tubers, lifting them onto a moving open slat conveyor or elevator. The potatoes then move upward and backward, during which time dirt is dropped thru the slats to the ground, and delivered to a set of agitated steel bars. Here more dirt is shaken off, and the potatoes are dropped on the surface of the ground, cleaned and ready to be picked up.—E. R. W.



Concrete Milk House with Water Tower of Concrete



Digging Two Rows of Potatoes at a Time With a Tractor, and Doing a Good Job at That.



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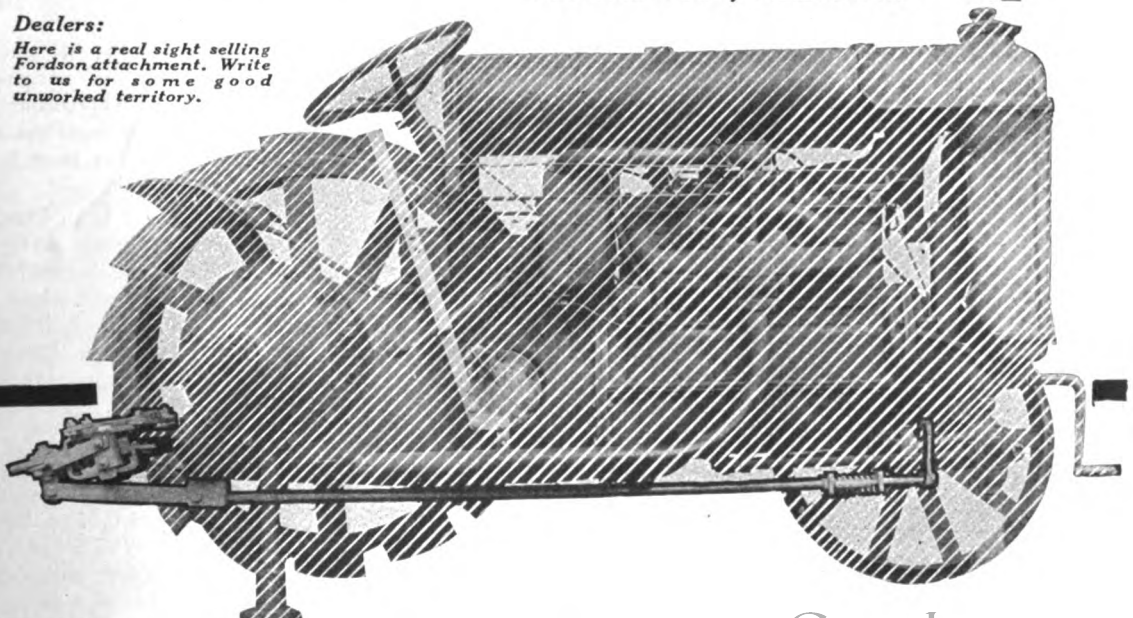
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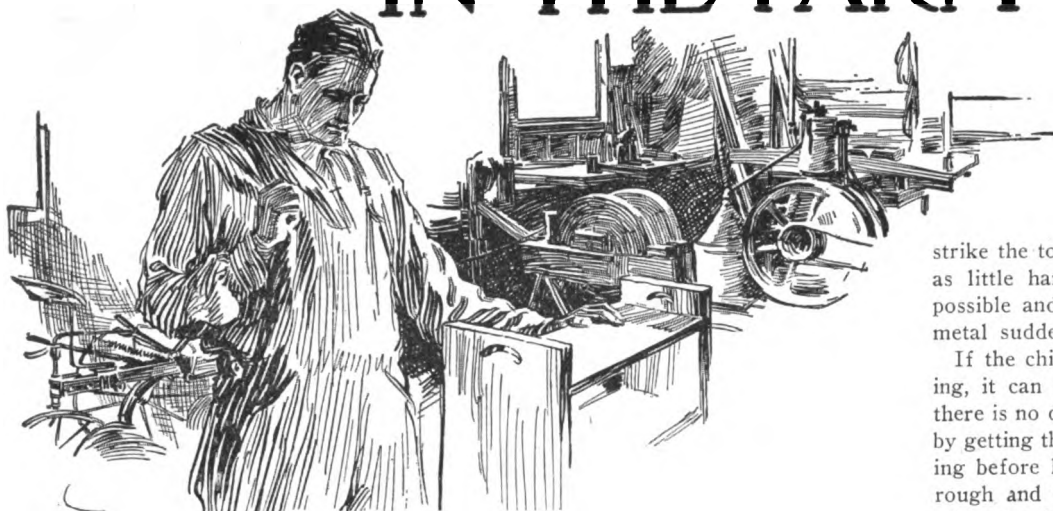
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IN THE FARM SHOP



Making a Serviceable Cold Chisel

By

LOWELL R. BUTCHER

IT sounds comparatively easy to talk about a good chisel, yet a large part of the chisels found in tool kits are not good chisels. A good chisel must be forged, shaped, hardened and drawn correctly if it is to give satisfactory service.

Chisels are made of tool steel which has a hardening property that is desirable in obtaining a keen cutting edge. This hardening of a chisel is the difficult, yet most important item in making good chisels.

Taking, for an example, a medium sized chisel made from $\frac{3}{4}$ -inch octagon (eight-sided) tool steel, we will follow thru the different operations in making a chisel.

Cut off a length of the steel suitable for the chisel. Ten to twelve inches of

stock will make a convenient sized tool and will allow for drawing out when the chisel becomes worn.

Heat one end of the steel for about two and one-half inches to a good cherry red. All forging should be done with the chisel at this color. Now trim off the two opposite sides of the heated end to form a very blunt tip. Trimming in this way will keep the metal from lapping over when drawing out. If the metal were allowed to lap, it would be very apt to crack and break at laps when the chisel was put into use.

The chisel is now drawn out or flattened on the heated end, working the metal towards the end and widening as little as possible. It is a good plan to draw out the tool on the horn of the anvil as there is less tendency to widen the point. If the worker will proceed very carefully during the drawing out, there will be very little "edging in" to do. "Edging in" is narrowing the point of the tool by hammering on the edge. If much of this is done the grain of the metal will be distorted and weakened as in lapping. If the chisel gets too wide during the forging, it is better to trim it on the emery wheel before hardening.

Figure 4 shows the dimensions that a chisel of this size should be forged to. Try to keep the chisel as nearly the width of the stock as possible. All heavy hammering must be done at a good cherry red, altho the tool may be finished with light blows until the tool has almost lost color. Under no circumstances should the chisel be struck after it has lost color. The forged end of the chisel may now be finished with a flatter. This will erase the hammer marks and give a smooth appearance.

There are a few things that should be emphasized about the forging: Draw out the tool at a good cherry red; finish with light blows at a dull red; do not

strike the tool after it has lost color; do as little hammering on the edge as is possible and do not quench or cool the metal suddenly by placing in water.

If the chisel is ground before hardening, it can be worked much faster and there is no danger of drawing the temper by getting the chisel too hot. This grinding before hardening is, of course, only rough and the chisel must be given an edge after hardening.

Altho often neglected, the shape that is given to the end of a chisel is quite important. The sketches show three different chisel edges, each exaggerated for purposes of illustration. Figure 1 shows a chisel that has been ground to a concave edge. It can be readily seen that if this chisel is driven

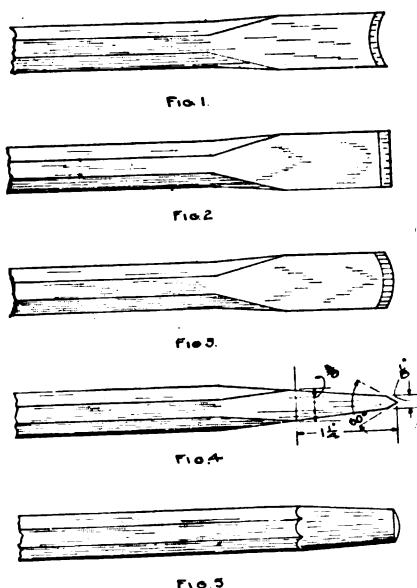


Proper Method of Starting the Chisel.

against a flat surface great strains are put upon the unsupported corners of the tool. This shape should be avoided as the corners of the tool will break off before it has been in service for any length of time.

Figure 2 is an illustration of a chisel ground with a perfectly straight edge. If the chisel could be held perfectly straight when working with it, this shape would be very satisfactory. However, it is almost impossible to keep a chisel in this position and, at some time or another, undesirable strains are put upon the corners.

The angle that the cutting edge of the chisel is ground to should receive careful attention. Looking at the chisel from the side (Figure 4), the faces of the cutting edges should make an angle of 60 degrees with each other. This makes a cutting angle that is blunt enough to



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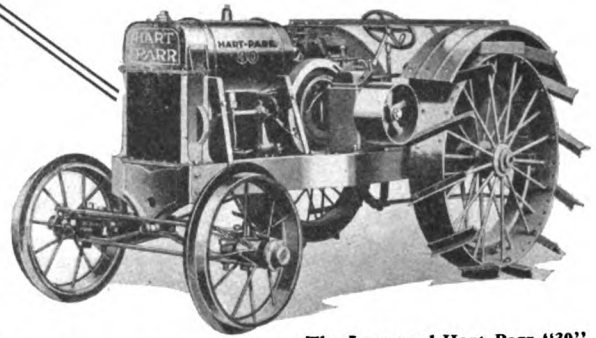
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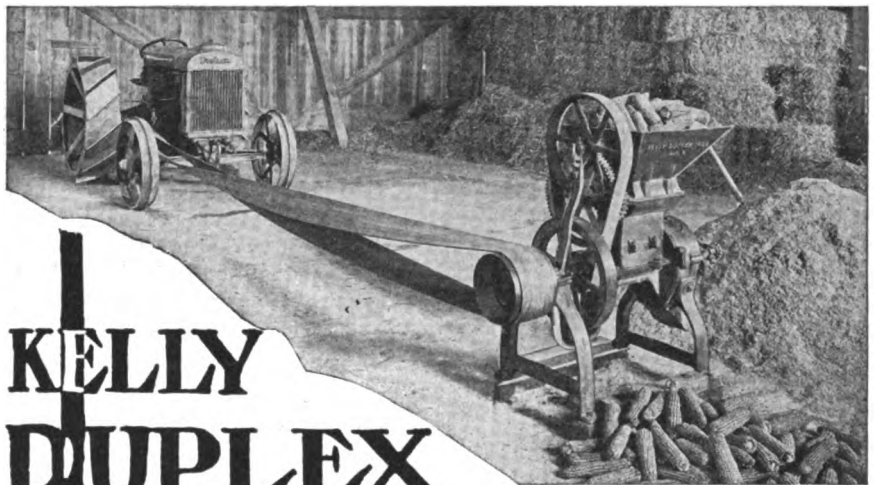
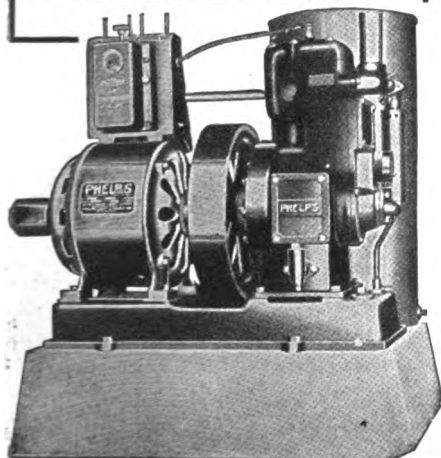
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wear well yet sharp enough to cut the most tenacious material.

After the chisel has been rough ground to approximate shape, it is ready for hardening. Different grades of steel require different hardening heats and the method given is only approximate. The material should be experimented with, gradually raising the hardening heat until the proper temperature is found.

Heat the chisel for a distance of two to two and one-half inches back from the cutting edge. When the end has reached a uniform dull cherry red, cool the chisel suddenly by plunging it vertically into cold water to a depth of about half the heat. Move the chisel up and down until all red color has disappeared. The end is now polished with emery cloth or a piece of brick to remove the blue oxide or scale and reheated by holding over the fire. Keep the chisel in the heat until a dark purple color appears on the polished end and cool again, this time entirely.

The first heating and quenching makes the chisel very hard and also very brittle. The second heating or slight annealing, softens the material slightly so that it loses the brittle quality yet retains the hardness.

There is another method of handling the work whereby the hardening and tempering is accomplished in one heat. The chisel is heated as before and quenched to the same depth but removed before the red color has entirely disappeared from the upper part of the heat. Polish the end quickly as before and watch the color as it creeps down to the point. The cooled end slowly reheats as the heat comes down from the upper part. A purple color will gradually approach the end. Just as this reaches the end, the chisel is cooled again, this time completely.

When heating the chisel for hardening, care should be taken that it is heated uniformly. The thin end, if not watched, may become overheated before the thicker part of the chisel is raised to the cor-

rect heat. If this happens, draw the chisel from the fire and allow the point to cool, reheating more carefully. Under no circumstances cool the point in water; allow it to cool gradually.

The upper end of the chisel should be ground so that it is slightly bell-faced with tapering sides as shown in Figure 5. This shape will discourage a battered end which causes splits. As soon as this end of the chisel becomes battered, grind off the rough edges giving back the initial shape. A little care in this way will greatly prolong the life of the chisel.

After the chisel has been hardened and



Edging in the Chisel.

drawn, it may be tested for proper hardness. A properly hardened chisel will be slightly scratched with a fine file. If the chisel breaks or chips, it was hardened at too high a heat and should be rehardened at a lower temperature. If soft, it should be hardened at a higher heat. Until the workman fully understands the qualities of the steel he is working, it is better to experiment with a small sample until the desired hardness is found. Grades of tool steel vary and the best workman cannot attain the best results until he is familiar with the properties of the particular metal.

The methods and dimensions given were for a certain size of stock, but the methods are equally applicable no matter what size chisel is desired. Proportion your tool so that it is neat looking and convenient. The hardening and tempering processes are the same except that smaller chisels will not be heated as far back for hardening. With a little experimenting and testing even a person inexperienced at forge work can turn out a satisfactory and serviceable cold chisel.



HAVE you had your community wood bee to work up fuel for keeping the schoolhouse warm this winter?



THEY say the average span of life in the last 150 years has doubled because of increased knowledge of improved living conditions. Do you make use of that knowledge?

Storing Root Crops

BEETS, turnips, parsnips, carrots, sal-sify, and rutabagas can be successfully stored by burying them in the soil or by placing damp earth about them in a cool, frost-proof cellar. Perhaps cellar storage is the most convenient and satisfactory for root crops. It serves to keep the roots in a crisp and tender condition, when a cool temperature is maintained.

To store any of the root crops in the cellar, some convenient vessel is necessary. An apple box or any other container of about that capacity will do, altho a box of some kind is preferred. The vegetables should be harvested late in the fall by pulling them up and cutting off the tops an inch or so from the crown. Spread a layer of ordinary garden soil 1 inch deep in the bottom of the box. Then add a layer of roots. If space permits, it is better to pack so that the roots do not touch each other. Cover with soil and add another layer of roots. Continue placing a layer of soil and a layer of vegetables until the box is filled. The soil must be moist. Label the box and set in a cool frost-proof cellar. Moist sand may be used instead of soil if it is available. Examine the soil occasionally during the winter, and if it becomes dry add sufficient water to make it damp, but not wet.

Root crops may also be stored in the field where they are grown, in soil-covered heaps. A well-drained location should be selected and about three inches of clean straw spread on the ground. The roots are then piled on the straw in a cone. The heap is then covered with two or three inches of straw with the center drawn together to a height of about one foot and tied to form a ventilating chimney. The chimney should be about five inches in diameter. The chimney is necessary to carry off the foul air and gases. The straw is then covered with three or four inches of soil. As the weather gets colder, more soil should be added so as to prevent freezing. A ditch to carry away surface water should be provided.



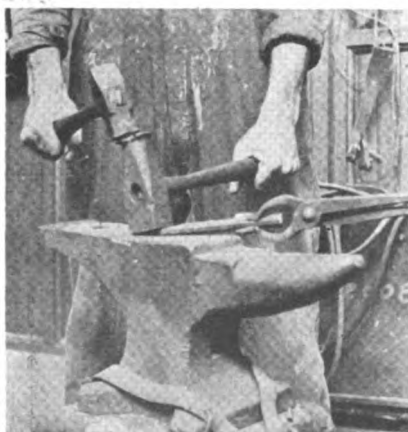
MORE diversification is needed on many farms. Diversification stabilizes the farm income, distributes the demand for labor more evenly thruout the year and reduces the cost of man and horse labor.



DON'T store bruised or cut potatoes. Disease will usually attack them first and once started it becomes destructive and hard to check.



PUMPKINS need a drier storage place to keep well than do root crops.



Shaping the Point of the Chisel with a Flat.

Improving the Pitted Fruits

THE drawings below, Figures 1, 2 and 3, show the method by which anyone can easily set buds of extra-fine pitted fruits, such as cherries, apricots, plums and all fruits with pits, into any stock of the pitted sprouts that are often found on most farms.

Any time when the bark slips easily the budding may be done. Cut the bud from the scion as shown in Fig. 1, and clip off about one-third of the end of the leaf.

Do this only as used, for they dry

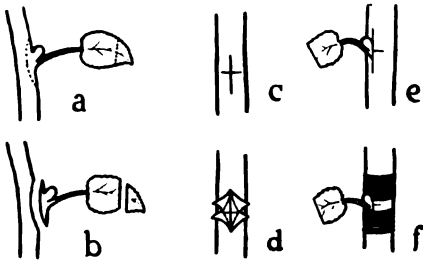


FIG. 1 FIG. 2 FIG. 3
Showing How Fruit Trees Are Budded.

out and soon are ruined if not used immediately. With a sharp-pointed knife cut across the bark up and down, about one-half inch across and about an inch long, as shown in Figure 2. Turn back the points of the bark carefully, and place the lower end of the bud in the cut, and press it down in the incision until the bark above covers it. Close the bark over the two ends of the bud, but leave the bud free.

With woolen yarn, wrap above and below carefully, at least one inch as shown in Figure 3. This may be coated with beeswax or you can buy regular grafting wax, which is not better.—R. B. RUSHING, Simpson, Ill.

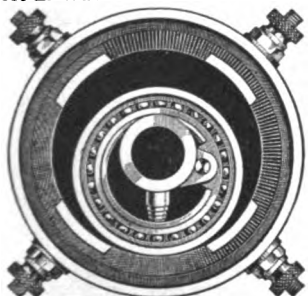
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FOR FORD CARS AND TRACTORS**

THE NELSON TIMER BUILT FOR SERVICE

WRITE FOR DEALERS PROPOSITION

NELSON TIMER COMPANY

610 E. Water Street MILWAUKEE, WIS.



Price
for
Ford
or
Fordson
Tractor

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Guaranteed

THE UPCO-LIGHT

FARM LIGHT AND POWER UNIT

is a standard time tested plant backed by operating efficiency records second to none.

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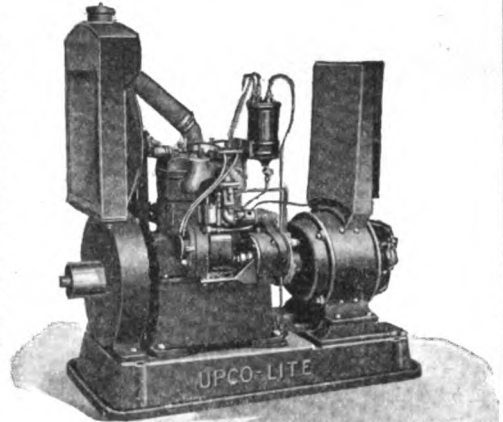
Plants are the definite results of more than 20 years' experience in the production of Unit Light and Power Plants of many purposes and embodies the latest operating and control features.

"A SIZE FOR EVERY NEED"

1-2½ and 3½ KW Plants in 32 volts. 2½-3½-5-7½-10-15 and 25 KW Plants in 110 volts.

**UNIVERSAL
PRODUCTS CO.
OSHKOSH, WIS.**

*Write, your territory
may be open*



SPECIFICATIONS: 2½ KW. Engine—2 Cyl., 3½" x 4½". Speed 1000 RPM. High Tension Magneto, Stewart Vacuum System. Generator 2½ KW. Voltage 32 or 110. Battery in sizes 90 to 215 AH.



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It will bring to your friend twelve consecutive numbers of **Farm Mechanics**, that bright, colorful, picture magazine for good farmers.

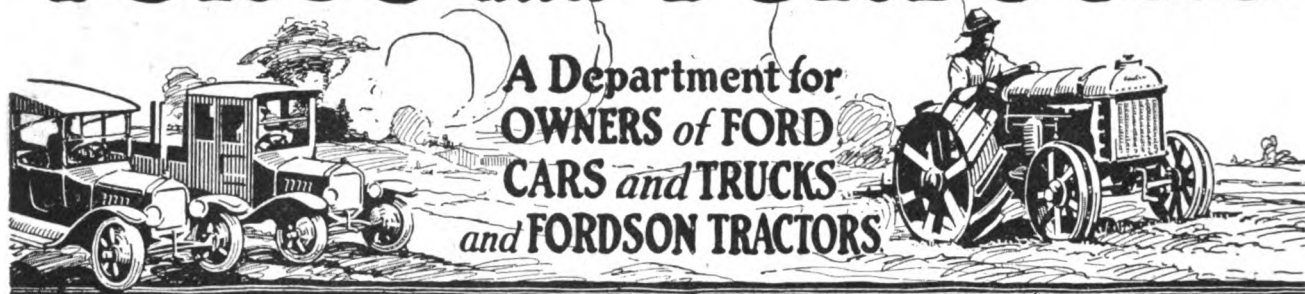
And this Christmas gift of **Farm Mechanics** will reflect your good judgment and taste. The remembrance will be appreciated, because the literary value, illustrations and features of **Farm Mechanics** are of the best and most practical character.

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Solve that Christmas gift problem. Make it a useful gift—an economical gift—one year of **Farm Mechanics** for **\$1.00**. Attend to this matter now—send your order today.

FARM MECHANICS, 1827 Prairie Ave., Chicago, Ill.

FORDS *and* FORDSONS



MOTOR TROUBLE ADVICE FOR FORD OWNERS

By F. M. Service

Ford Ignition Out of Adjustment

To the Expert:

I have a Ford and I can't start it unless I use the batteries and it doesn't start on them any more. Seems like nobody can locate the trouble. I had the field tested out twice now and it is not in that. It has not that smooth run to it. Seems like when it first starts it just jars the motor to pieces, but when you get it in high up to about 15 or 20 miles it runs fair. I had a new carburetor put on and a new timer. I have been with it where they claim to be experts, but it has them all puzzled. So if you can throw any

light on this, will be gladly appreciated.—
WM. OESTERLE, New Holland, Ohio.

Answer—If your magneto is up to standard; that is, developing 18 to 20 volts at a normal engine speed and the spark plugs have their gaps set at not more than $1/32$ of an inch, then the hard starting must be in either the timer or the coil units. If the timer is as you say, it may be that there is not enough tension on the roller arm to bring it into good contact with the contact surfaces on the timer shell. To increase this tension, remove the timer shell and turn the motor over until the roller is in a position where a screw driver can be placed between it

and the cam shaft. Then pry out with the screw driver so as to bend the roller arm out. This will cause the small spring to exert more tension and will bring the small roller more firmly against the timer shell contacts and will make a path that the current from the magneto can follow without difficulty.

If the trouble is in the coil units, it lies either with the adjustment of the vibrator points or that the points are burned away or so badly pitted as to prevent them from making a good contact. If inspection shows that they are badly pitted or burned so as to be black, replace them with new. The proper adjustment is for the points to be not more than $1/32$ of an inch apart when the vibrator is held down and when it is released there should be just enough tension to bring it up against the upper point. If this tension



The Portland, Ore., Branch of the Ford Motor Co. Organized This "Ford and Fordson Caravan" and Carried the Message of Motorized Equipment to the People of the State. The caravan covered about 2,000 miles and was received with enthusiasm, many towns taking a holiday to see the exposition. The picture was taken at Seaside, in the park that marks the end of the Lewis & Clark trail.

on the vibrator is too strong, the current that is generated at cranking speed is not strong enough to draw it down or cause it to vibrate and hence there is no spark at the spark plug to fire the charge. To increase or decrease this tension in the vibrator, simply tip up or bend down the small brass piece to which the vibrator is fastened by two screws.—F. M. SERVICE.



Headlights Weak

To the Expert:

I have a Mitchell D40 and a Ford 1920 model; both are equipped with a starter and a new battery.

Can you tell me why the headlights vary with the speed of the motor, unless I run at a speed of 30 miles per hour, I do not get the lights that I should?

I would be very much obliged if you could inform me as to where my trouble is.—RAYMOND SORNSON, Exira, Iowa.

Answer—A weak or poor grade of battery or a loose, broken or corroded connection some place in the wiring between the battery and the headlights are the only things that could cause the lights to vary as you describe. The only time the speed of the motor will effect the lights is when the ground terminal on the battery becomes broken or disconnected. This throws the entire load of current from the generator directly in to the headlights and they would promptly burn out, for at a speed of thirty miles per hour the generator will be developing between thirty and forty volts.

A battery simply acts as a storage cell and reducer valve for this high voltage, allowing only two volts to each cell to pass thru it, regardless of how much current is thrown into it by the generator, hence a three cell battery as is used in a Mitchell and a Ford will allow only six volts to pass out, regardless of the speed the motor may be running. If the battery is weak and cannot stand a full charge, or there is a loose connection some place, the battery would not deliver the full six volts to the lamp, when the motor was running slow, and they would burn dim, but when the motor was speeded up and the generator began to generate over six volts this would load up the battery and the lights would brighten up to their natural brilliancy.

The fact that both your cars have the same trouble would look as if it were caused by weak batteries.—F. M. SERVICE.



New Ford Pistons

To the Expert:

Will you please answer the following questions for me?

I have owned a Fordson for three years and last spring placed over-sized

Save Your Fordson

Sudden racing of a Fordson engine, such as is bound to occur during intermittent periods of strain and free running, is very destructive. This alternate racing and idling of the motor cannot be avoided without the use of a satisfactory governor.

Our "JR" (fly ball type) fills every possible requirement. We claim it is as good a governor as there is on the market regardless of price.

Very simple and easy to install. Fits both Model A and Model B Fordson, specify when ordering.

Satisfaction is positively guaranteed or money refunded.

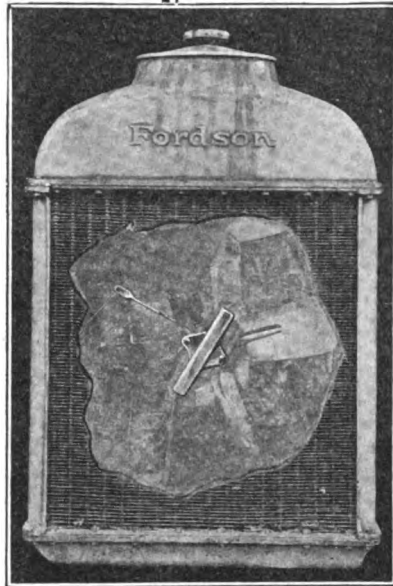
PRICE:—\$10.00, f. o. b.

Agents and Ford dealers everywhere are finding a great demand for this simple, efficient "JR" governor.

**We want more representatives.
Liberal discounts.**

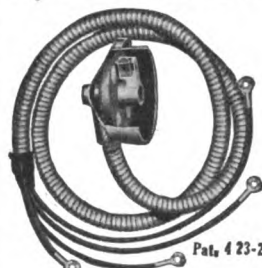
Write us today. A trial will convince.

**PARAMOUNT MFG. COMPANY
LANCASTER, PENNA.**



Turner 2 in 1 Timer-

For Ford Cars, Trucks and Tractors



Pat. 4 23-22

Sales on the famous Turner 2 in 1 Timer have never been so great as at the present time. Time and again our production has been increased (several times doubled) to meet the ever growing demand for this great product. Recent tests have shown the Turner 2 in 1 Timer going strong and showing very little wear at the end of fifty thousand miles. Has stood repeated and rigid tests for over five years and has proven a genuine quality article and a boon to every Ford owner. Increases power, insures an instant start in all weather, lessens fouling of two front plugs, saves gasoline and stops motor kicking. Is oil, grease and waterproof. Requires no oiling. Easily installed.

Price Complete with Wiring Assembly in Metal Conduit \$3.60

TURNER MANUFACTURING CO., Kokomo, Ind.

Also manufacturers of the following high grade products:

Turner Ford Foot Accelerator; Turner Spring Leaf Spreader and Lubricator; Safety Lightning Wire Assembly; Turner Door and Throttle Lever Extensions.

TURNER

Alloy Steel on the Farm

CHAPTER IX

Machinery Makers' Attitude

That makers of farm implements are ready to use alloy steel in their machines as soon as farmers and dealers convince them that the demand exists, was shown by the liberal attendance of their executives and metallurgists, at the International Steel Exposition, at Detroit the first week in October.

This exposition was held under the joint auspices of the American Drop Forge Association and the Society for Steel Treating.

If the addresses and discussions on alloy steel at the Conventions could have been radiophoned to the homes of the six million farmers of the United States, there would arise so urgent a demand for alloy steel in the vital parts of farm machinery, that a revolution in implement making would result.

Alloy Steel—steel containing a small percentage of such metals as nickel, chrome, vanadium, or molybdenum—resists wear, shock and vibration much better than ordinary steel.

Parts made of alloy steel may be much lighter in weight for the same strength. Or, if made as heavy as parts now made from ordinary steel, the endurance and life will be greatly increased—sometimes doubled or trebled.

The cost, to American farming, of breakage, delays and repairs on farm machinery and tools must amount to a staggering sum each year.

The first step toward lightening that burden is for American farmers to insist that repair parts be forged or formed from alloy steel.

A logical second step is for farmers to insure themselves against breakage-losses by refusing to buy new machines in which parts that must endure great stress, vibration or wear are made from anything else than alloy steel.

To be doubly-insured, specify INTERSTATE Alloy Steel.

Have these articles interested you? Have you acted on the suggestions given from time to time?

Have you seen any tangible results?

We will appreciate letters from individual farmers, and from officers of agricultural organizations on this subject.

Interstate Iron & Steel Co.
104 South Michigan Avenue
Chicago

pistons in it, which were not the exact fit but better than the old ones. Can these pistons have oil grooves and be drilled? Will it have any effect on the sealing of cylinder walls? Would it stop the burning of any great amount of oil? If this can be done, will you send diagram of how it is done? The valve push rods have holes about 1/16 inch worn in them by the valve stems. Would that cause the motor to miss when idling? Should there be new push rods installed?

What makes the intermediate gears stick? What can be done to fix it?—C. E. THOMAS, Bushnell, Ill.

Answer—There is no reason why the pistons cannot be drilled and grooved in your tractor, and it will have no effect on sealing the cylinder or compression, but should decrease the oil consumption considerably. To do this, turn off on a lathe about 1/8 inch of the piston on the bottom groove of the lower piston ring groove, this to be taken off at a 135 degree angle to the face of the piston. Then drill 1/8-inch holes every inch around the circumference of this, at 45 degrees to the piston face. It will be readily seen that the piston on the up stroke will gather the excess oil on the cylinder walls and discharge it back thru the one-eighth inch holes into the crank-case.

The excess play in the push rods would not cause the motor to miss, but if this becomes too great it would cause the motor to lose power, due to the valves not being opened far enough. The only remedy is to replace the push rods.

If the sticking of the intermediate gears occurs when you try to disengage them, the trouble must be caused by a bent or twisted gear shifter or gear shifter lever. This can readily be inspected by removing the gear shifter plate from the transmission housing.—F. M. SERVICE.



Manifold Gets Red Hot

To the Expert:

Some time ago, I had my 1920 model Ford ton truck overhauled in a garage and ever since then, I have had trouble with my lights which are taken from the magneto. When I use the headlights the motor sputters and misses.

My wiring is in good shape. The exhaust manifold gets red-hot when running the motor, but have new valves which do not leak.

I have also new oversize pistons in the cylinders and have good compression. I also had a new magneto installed but cannot get more than six miles per gallon of gas. I have been told that the magnets are too far from the coils but there is no end play in crank-shaft.

Could you advise me the best way to go about repairing the magnets myself.—JOHN W. ROBINSON, Bangor, Michigan.

Answer—The advice you have had is doubtlessly correct—magnets are either too far from field-coils, or if they were removed from the flywheel, they have not been put back as they should have been. The fact that there is no end play in the crank-shaft has nothing to do with it, as the proper distance is obtained by shims placed between the coil and the motor block. When set properly the magnets should be not more than one thirty-second of an inch from the face of the coil. If put any closer than this they will strike the coil and produce a distinct knock. The shims that are used behind the coil are of steel and can be obtained at any Ford repair shop or agency. It is of course necessary to remove the motor from the car and detach the transmission, by taking out the four cap screws that hold it to the crank-shaft, then remove the three-eighths cap screws that hold the coil to the cylinder block and place one shim in place and put back the transmission, when this has been tightened up as far as it will go, gauge the distance between the coil and magnets with a thin piece of cardboard, if still too far away take down again and try another shim. When the proper distance has been gotten be sure and wire the cap screws holding the coil and also the transmission as they are liable to loosen up if this is not done.

The reason for your poor mileage and the exhaust pipe getting red-hot is that the spark is too far retarded. To advance this bend the rod that connects the timer shell to the control lever on the steering post, until the timer shell is brought over more, just as it is when the spark lever is advanced. When the proper place is reached the manifold should not become red hot and the motor should develop its maximum power. this when the spark lever is advanced at the steering wheel.—F. M. SERVICE.



Fordson Clutch Slips

To the Expert:

I would like a little advice. My Fordson Tractor will not stay in high gear. It was bought last June, and has only run about 20 days, and not much in high except to and from the field and it will stay in high about 200 yards and come out into neutral. Can you tell me the trouble?—C. J. FMEKE, Shattuck, Okla.

Answer—The trouble you are having is due to either a badly worn gear, or is caused by the gear shifter plunger not operating properly. As your tractor is practically new the chances are that the

gear is all right and that the trouble lies in the gear shifter plunger. This is a small round headed pin with a spring behind it that holds the gears in the position they are shifted to, by dropping into a shallow hole in the gear shifter shaft. An inspection of this can be made by removing the gear shifter lever and plate from the tractor, the action of the shifter is then exposed to view and can easily be fixed.—F. M. SERVICE.



Oil for Tractor Pulley

To the Expert:

Would like to know what could be done so that the outer bearing on the Fordson pulley could get some oil. The outer bearing, I suppose, should get oil from the crank-case, but no oil ever gets out there. Was thinking about plugging the two lower holes in the pulley housing, so that the oil that runs in the two top holes couldn't get out any other way than thru the two bearings. Have only used the pulley about one week and there was almost one-half inch play. This is a 1920 Fordson. What should be done to overcome this?—ARVID A. BERGDAHL, Skandia, Mich.

Answer—The splash of oil in the Fordson crank-case should throw enough oil in the pulley housing to efficiently lubricate the outer bearing. In fact, the Fordson manual makes special note to get the hole in the pulley housing down, so that the excess oil in it will drain back into the crank-case. The trouble you are having would indicate that your pulley is a defective one, and we would suggest that you take it up with the dealer you purchased it from and he should replace it with another. To plug up the drain holes as you suggest would cause a considerable leakage from the outer bearing, as there is nothing to keep the oil from running out there.—F. M. SERVICE.



DON'T waste tears or language on castors that keep dropping out. Fill up the hole with paraffin, put the castor in while the paraffin is still soft and never be troubled again.

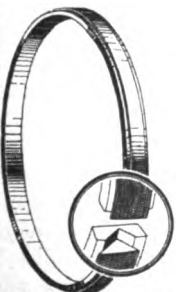
Have You a New Car?

Then you'll want to keep it new. Now while it is new is the time to equip it with piston rings that are constructed on the correct principle—rings that breathe with the motor.

Your car will last longer give the thrill of new pep and new life for many more miles if you equip it with

**Hoess Humanized
Piston Rings
Garages**

Write us today for our
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HOESS BROTHERS



Hammond, Ind.

KINGSTON CARBURETORS

*Recognized
Standard for
Tractor Use*

THE FAMOUS KINGSTON CARBURETOR has dominated the tractor field from the beginning of the tractor industry. Today its leadership is unquestioned and unassailed. This dominance is due not only to the recognized excellence of the carburetor, but to the close co-operation of the world's largest carburetor industry with the manufacturer, the dealer and the tractor user. Most good tractors specify Kingston as standard equipment.

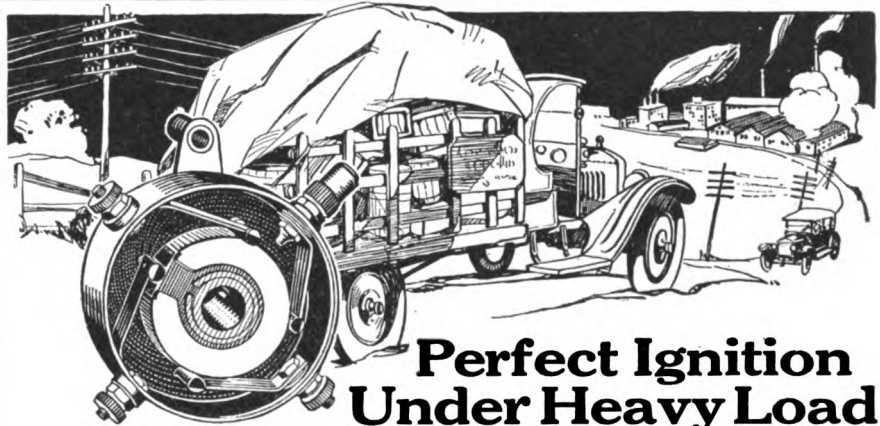
Write us a line and let us tell you more about it.

BYRNE, KINGSTON & COMPANY

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Branches: NEW YORK, BOSTON, CHICAGO, DETROIT, SAN FRANCISCO

(There's a Kingston for Every Tractor)



Perfect Ignition Under Heavy Load

For Ford car, Ford truck, or Fordson tractor, the U & J Rotor Timer is guaranteed to outwear five ordinary timers and gives a red-hot spark with perfect timing every mile of its life. The U & J Timer for Fordsons, specially designed, is the only Timer that will stand heavy tractor service in the field.

On Ford cars and trucks, the U & J Foot Accelerator gives you perfect gas control and keeps both hands on the steering wheel—where they belong. All steel, nicked, with Adjustable Foot-Rest and Guide. It is the only foot-throttle easily adaptable to all Ford Motors.

Any dealer can order U & J Motor devices for you and get immediate delivery. We also authorize any dealer to sell U & J Motor Devices on 15 days trial—money back guaranteed.

Live dealers—write.

U & J CARBURETOR CO., CHICAGO

Exclusive Manufacturers of U & J Motor Devices

Main Office and Factory: 2853 So. Halsted St., Chicago

Pacific Branch: 357 Van Ness Ave., San Francisco

U & J Timers for FORD CARS
TRUCKS & TRACTORS

Our Implement Inspector



HE finds much new and worth-while farm equipment offered to increase efficiency and cut down labor.

EDITOR'S NOTE: Farm Mechanics does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address Farm Mechanics Information Exchange, 1827 Prairie Ave., Chicago.

Special Fordson Magneto

IT is now a pretty well recognized fact that a magneto gives an internal combustion engine greater power, thru more complete combustion of fuel, freedom from ignition troubles and a smoother engine operation. A magneto generates its own current, transforms it to high tension without separate coils and distributes it to the spark plugs at exactly the proper moment. The spark produced is larger, hotter and more uniform. It ignites the gas more quickly and burns it more completely than any other ignition system. That is why it gives the engine more power, makes it start easier and gets more power out of it.

One of the best known manufacturers of magnetos recently has brought out a high-tension ignition especially designed

for the Fordson tractor. The illustration shows this magneto attached to a tractor. It is a simple piece of mechanism. An iron paddle turns around inside some powerful magnets. Around the paddle is the coil in which the current is generated. The current is carried to a distributor which sends to it each cylinder in turn as it is fired by the spark.

The complete ignition system is in one spot, with all the working parts protected from dirt and weather. The magneto and its attachments may be placed on the tractor in an hour's time with no tools except a wrench. It is not necessary to take off the radiator. The timer is taken out, the attachments put in place and connected with the drive gears on the timer shaft. The attachment consists of plain gearing in a substantial case. It lubricates itself

from the tractor oil and is a practical, substantial device.

Included in the magneto is an impulse starter, which usually will start the engine on the first quarter turn. With this device, regardless of how slowly the engine is turning over, the maximum spark is produced so that the engine when primed will start immediately, even in cold weather.



Electric Bench Grinder

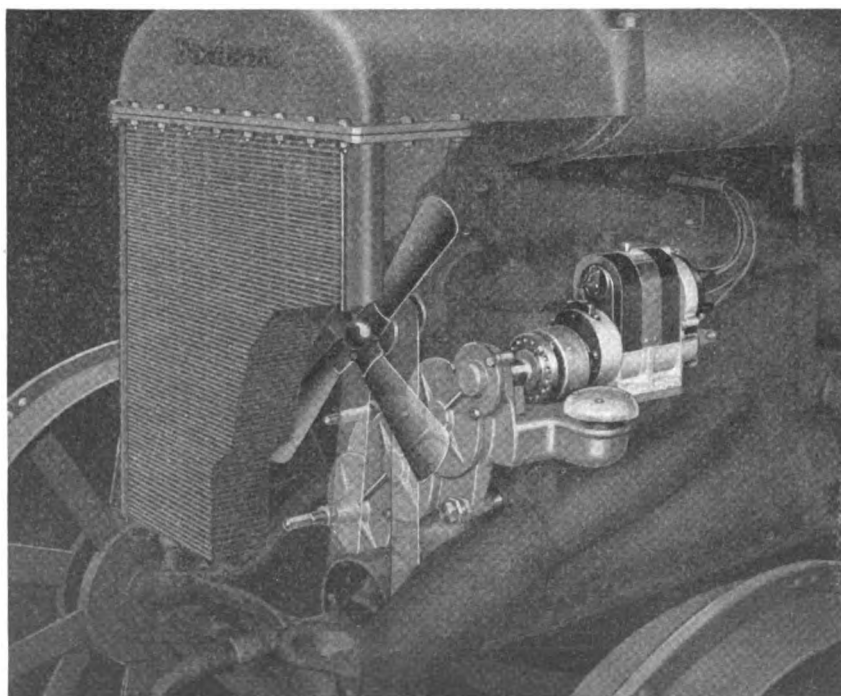
WHEREVER tools are used or grinding of any kind is required it is necessary to have an efficient grind-



Speedy Grinding Machine for the Farm Shop or Garage.

ing machine at hand. Shown in the illustration is a small, power-driven grinder that is especially adapted to farm shops where there is electric power available and in automobile service stations.

This grinder is a substantial piece of equipment having two wheels that are mounted directly on the motor shaft. One of the grinding wheels is coarse and the other fine. They are driven by a $\frac{1}{4}$ -horsepower motor at 3,600 revolutions per minute when not under load. With the machine are supplied two tool rests,



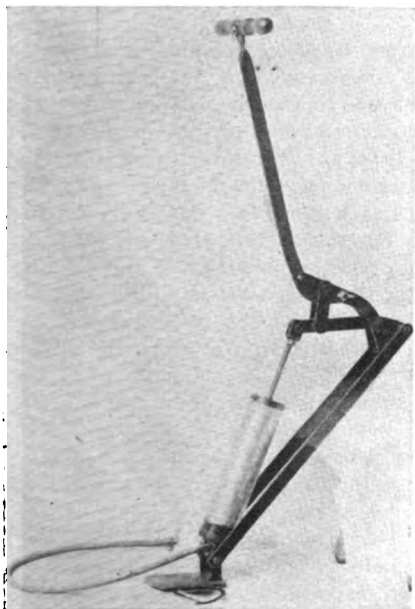
High Tension Magneto Installed on a Fordson Tractor for Which It Is Especially Designed.

two wheel guards and electric cable with attachment plug and electric switch. The machine weighs only 38 pounds complete and may be attached to any electric light socket.



This Pump Folds Up

THE accompanying illustration shows an air pump which folds up into a small space and can be slipped into any tool box. It is operated on the leverage principle and it is claimed that it will force air against a pressure of over 250 pounds. With each stroke there is de-



Pump That Folds Up and Takes Little Room in the Auto.

veloped increased power and leverage. The only parts in the compression chamber are a steel plunger with a heavy cup leather. It is claimed that the friction is nominal even tho the cylinder is quite short and the pump has no tendency to heat. It is said that a 30 by 3 tire may be inflated to 60 pounds pressure in 60 strokes.—A. P. Childs.

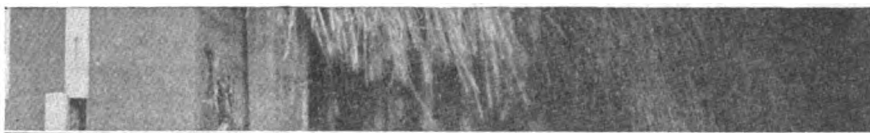


Extension Tractor Control

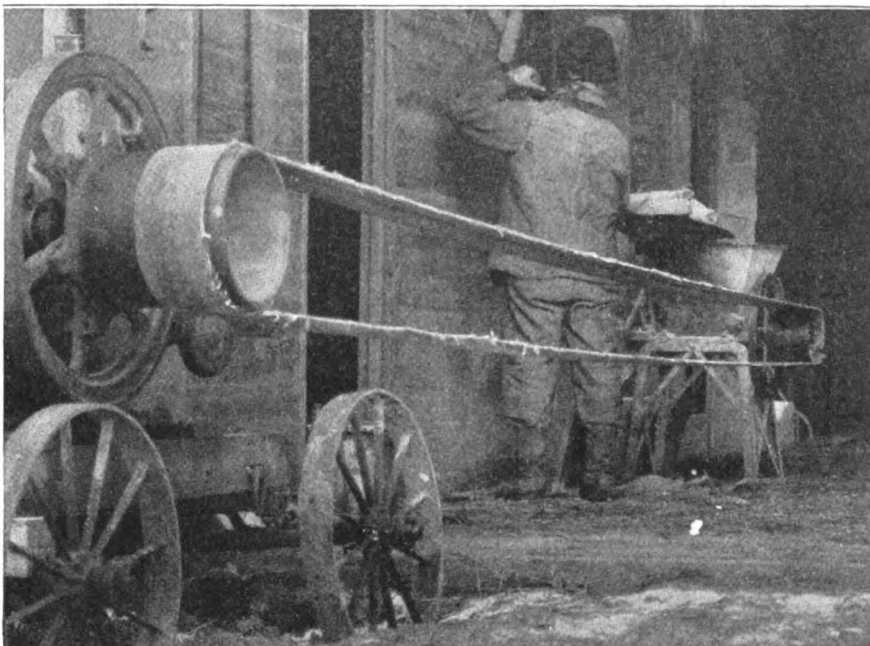
AS a matter of economy owners of tractor-drawn implements that require a man to operate them are equipping their tractors with extension controls. This enables one man to do the work of two men, as the operator of the machine also operates a tractor, a method which many tractor owners deem better as both machines are under the control of one mind.

There are a number of these tractor controls on the market. One of them is shown in the illustration attached to a binder, the drawing being made to show how the control is attached and how it works.

As will be seen by the drawing, the



AFTER FIVE YEARS OF SERVICE



Copyright 1932, by The Goodyear Tire & Rubber Co., Inc.

It looks a bit frayed and fuzzy after five years of hard service on the feed grinder, the corn sheller and the wood cutter, but even today, in its sixth year of wear, it's a grand old powerful belt, this Goodyear Klingtite Belt on W. J. Hiermeier's farm at Alta, Illinois.

"I have used it on every winter job since 1916," says Mr. Hiermeier, "and it has always been satisfactory. On the hardest pulls it has always delivered the power without slipping. Makes no difference what the weather is, rain or cold or heat, the Goodyear Klingtite Belt performs at its best all the time."

Goodyear Klingtite Belts do wear. They are made especially for farm power service. Their ply construction so distributes the load as to prevent ply separation. Their friction surface holds the pulleys in a slipless grip, yet permits them to run so easily, lightly and steadily as to save fuel and favor the engine bearings.

They need no breaking in. They require no belt dressing. They do not stretch or shrink, and consequently they eliminate the trouble of engine re-setting.

You can get them in endless type for heavy drives and in suitable lengths for lighter duty. They are sold by your local Goodyear Dealer and by many good hardware merchants. For further information about Goodyear Klingtite Belts, write to Goodyear, Akron, Ohio, or Los Angeles, California.

Goodyear Means Good Wear

GOODYEAR

KLINGTITE BELTS

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS



Vulcanize Your Cuts or Punctures in 5 Minutes

No tool-kit is complete without a Shaler 5-Minute Vulcanizer. It is a necessity and the greatest convenience ever offered to the motorist.

Why take chances with cold patches when you can make a heat-vulcanized repair that will "stick"—even outlast the tube—in five minutes?

The Shaler 5-Minute Vulcanizer is easy to use—you need only a match. Always ready—never bothered by wind or storm. Cannot injure or burn the tube. No gasoline—no danger of fire.

Get a Shaler 5-Minute Vulcanizer from your dealer. It will soon pay for itself by the saving in time, trouble and tire repair bills.

Complete Outfit \$1.50

Slightly Higher in Canada and West of the Rockies

The outfit includes the vulcanizer, 12 Patch-&-Heat Units (6 round for punctures and 6 oblong for cuts)—ready to use—with complete instructions. Extra Patch-&-Heat Units 75 cents a dozen.

C. A. SHALER CO.

2264 Fourth St., Waupun, Wis.



WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

steering post is fitted with gears, making it comparatively easy to steer the tractor. The clutch control is a rope thru pulleys, which give it flexibility, operating equally well when the tractor is in line with the drawn machine or when making a right angle turn.

One point on which the manufacturer of this control lays emphasis is the ease with which it is detached from the tractor, making it simple to replace the steering wheel and permitting the use of the tractor for any sort of work. It is said to require no more time to make this change than to hitch or unhitch a team of horses.

There is nothing intricate about the control. The steering rods are a combination of telescoping rods and tubing, connected with universal joints which permit free movement at turns and over rough or uneven ground.

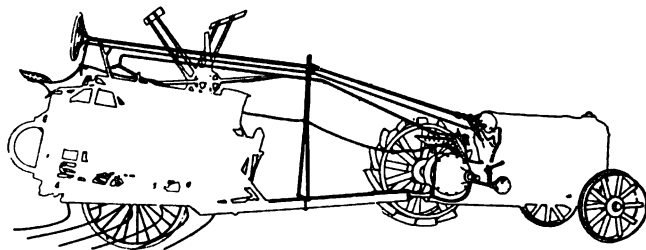
With this steering device there is an automatic clutch hook. This hook automatically locks the clutch out when the rope is pulled, making it unnecessary to tie the rope to the implement seat or to shift the gears to neutral. It need not be touched by hand or foot to hook or release the pedal.



Machine Fells Good-Sized Trees

A MACHINE that promises to speed up the work of felling trees is shown in the illustration. One claim

made for it is that it has cut down in 21 minutes trees 6 feet 2 inches in diameter at the butt. For this purpose a 7-foot blade was used. In cutting these



Drawing Showing the Extension Control of the Tractor.

larger trees the machine was removed as soon as the tree was listing and the job was finished by driving in two steel wedges and deepening the undercut with a hand ax. The inventor states that he does not move the drag saw away when felling a tree 2 or 3 feet in diameter, as he can guide it by wedges and the undercut. As the machine is 6 feet from the butt of the tree, there is little danger of a small tree kicking back that far.

One particular feature of the machine is that the saw can be changed to three operating positions or angles in half a minute. Then, after a man has felled a tree with this saw, he can change almost instantly the position of the saw blade in order to saw or buck the log.

The blade runs about 135 strokes a minute, which is considerably faster than two experienced sawyers can operate. The machine has been tested out in the timber near Puget Sound.—G. F. P.



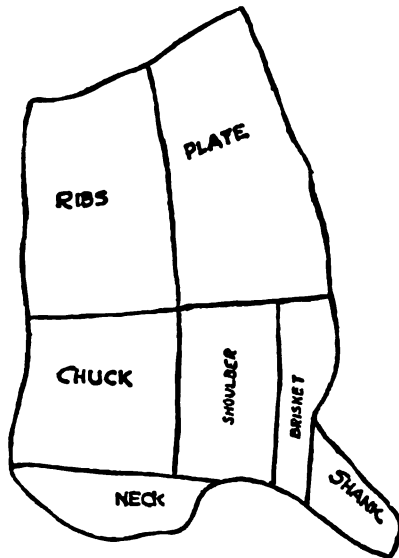
The per capita consumption of eggs in the United States, according to the Department of Agriculture, is half an egg each day.



Cross-Cut Saw Operated by a Gasoline Engine That Will Fell Good-Sized Trees.

How to Cut Up Beef

THE accompanying drawings show how to cut up a beef carcass and secure the greatest amount of meat. First, the half of beef should be quartered, leaving one rib on the hind quarter,

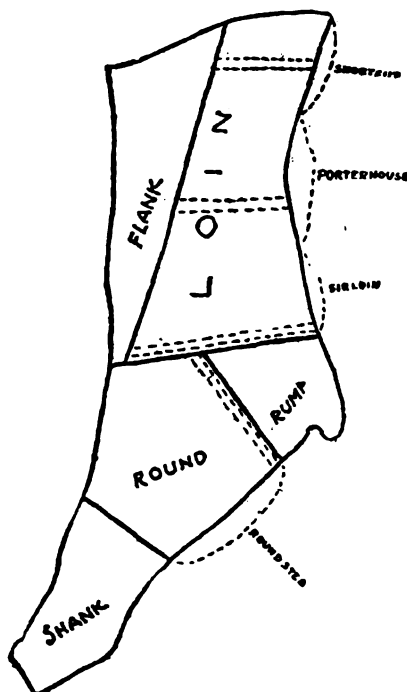


A Fore Quarter of Beef Showing Various Cuts.

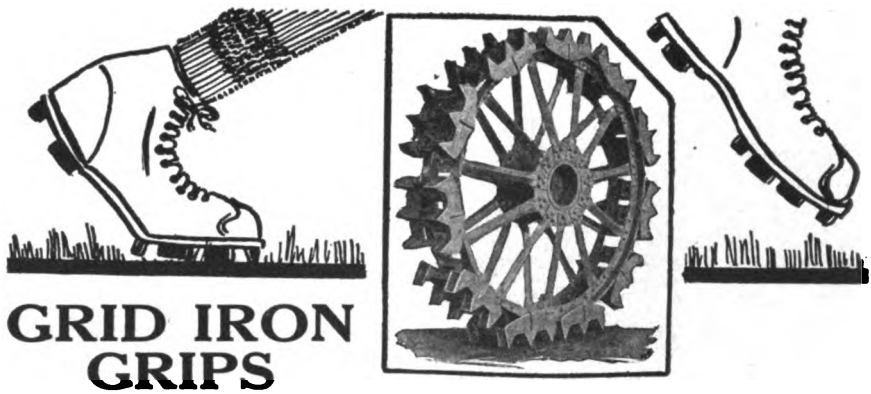
ter. The meat should be thoroly chilled before the carcass is cut up. Have a firm block or table on which to work, sharp knives and a meat saw. Always cut across the grain of the meat.

Lay the hind quarter on the block, the outside down, remove the kidney and kidney fat, remove the flank; locate the ball and socket joint, cut the loin from the round, remove the rump.

The loin and round are usually used



Hind Quarter with the Different Cuts Marked.



GRID IRON GRIPS

A football player would laugh at the idea of playing the game without his cleated shoes. So the farmer cannot expect to get the greatest efficiency out of his tractor without being equipped with a ground-gripping track-laying wheel.

GRID IRON GRIPS increase the traction 35 per cent.

Made in sizes designed for Fordson, Samson, Case, Wallis, International, Heider, Moline, Huber, Hart-Parr, Allis-Chalmers, Rumley, Avery, Waterloo-Boy, Twin City, E-B, Lauson, LaCrosse.

A Wonderful Agency Proposition. We advised you in the last issue that one agent had sold ninety-six sets this year. He sold another carload in September

SEND FOR OUR LATEST CATALOG

GRID IRON GRIP WHEEL CO.
TOLEDO, OHIO

HOW MANY SOILS ARE IN A FURROW

IN no field are soil conditions constant. The pull of the tractor varies many times in every furrow due to changing soils. One furrow may have clover sod, clay, sand, gumbo, loam—all of which require a different pull from the tractor. It is the business of the STANDARD GOVERNOR to smooth out such difficulties.

The STANDARD GOVERNOR will cut repair costs, decrease fuel costs, prolong the life of the Ford Truck or Fordson Tractor, and pay for itself many times over by increased efficiency in field and road work.

The STANDARD GOVERNOR has many points of mechanical superiority. Because of its all 'round high quality, it cannot be sold for a price as low as the prices set on inferior makes. It does everything that a good governor is supposed to do and it performs those duties efficiently, economically and lastingly. It is very easily installed.

The automotive dealer who is not selling his share of *Standard Governors* is passing up an opportunity in his territory. *The Standard Governor* is a fast selling device that gives the dealer a quick turnover and gives the truck or tractor owner lasting satisfaction. Write us today for prices and further information.

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The patented "oilSEALing" groove—found only in No-Leak-O—picks an oil film in between your piston and cylinder walls like "packing" in a pump.

This oil "packing" seals in all the expanding gas. Every drop must work.

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Owners: Write for interesting booklet, "The Piston Ring Problem and Its Solution."

NO-LEAK-O PISTON RING CO.

Dept. F-6

BALTIMORE, MD.

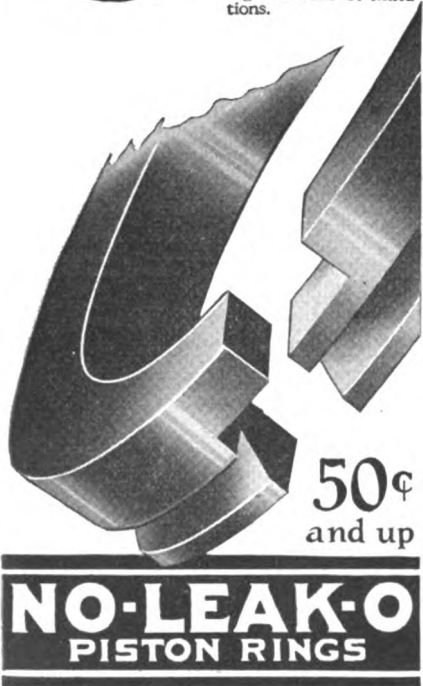
One price during eight years of continued success

One design—for all cars—50c and up



READ THIS SIGN

Remember it—Look for it. It marks a Garage or Supply Store that is "live" and dependable. Even if your Garage Man doesn't display it, tell him you must have No-Leak-O Piston Rings for your next overhauling. Beware of imitations.



for steaks, but can be used for roasts. The rump is used for roasts and boiling. The flank is good for flank steak, stew meat, hamburger, etc.

To cut the front quarter, lay the quarter on the block inside down. Cut off the neck, which is used for hamburger, weenie meat, etc. Remove the ribs. This cut is used as roasts. Next cut off the plate at a joint back of the elbow joint. The plate is used as short ribs, or may be boned and rolled for roasts. Cut off the chuck, which can be used for roasts, boiling pieces or steaks. Remove the shoulder, which can be used for roasts, boiling pieces or pot roasts. The brisket is used for boiling, hamburger, mincemeat, etc. The shank is used for hamburger and soup stock.

By following these simple rules in cutting up the beef carcass, more economical results will follow, and better meat be had.—E. W. G.



Filling the Granary Electrically

A NEW use for the farm electric plant is the operation of a blower which blows the grain into the granary.

One of the most tedious, hard tasks always has been carrying in the sacks of grain to fill the granary, or shoveling it in from truck or wagon by hand. Electric power has made it possible to do this mechanically.

The photograph shows one of the new electrically operated blowers at work on the farm of William Allyn, near Garnaville, Iowa. The blower consists of a metal, open-topped sort of trough-shaped box with an inclined bottom. At the lower end a fan is mounted in a compartment. From this compartment a pipe with a diameter of six inches or more reaches up 25 feet alongside of the granary and up to an opening at the top of

the building. The fan belts to an electric motor, any motor which is used to operate other machines about the farm may be used for the purpose.

The farmer backs his truckload of grain up against the blower as it is rigged up beside the granary, and starts the motor going. The rear door of the truck is taken out and the grain runs into the blower. It slides down from the trough to the compartment where electricity is revolving the fan at the rate of 800 or 900 revolutions a minute. The current sends the grain flying up the pipe to the granary door, where it falls down into the bins.

Mr. Allyn considers the blower one of the biggest labor-saving devices he has on the farm. The motor matter was simple as he uses about 200 feet of cord with his motor, so that the same motor can work machines at different parts of the farm buildings.—F. L. CLARK.



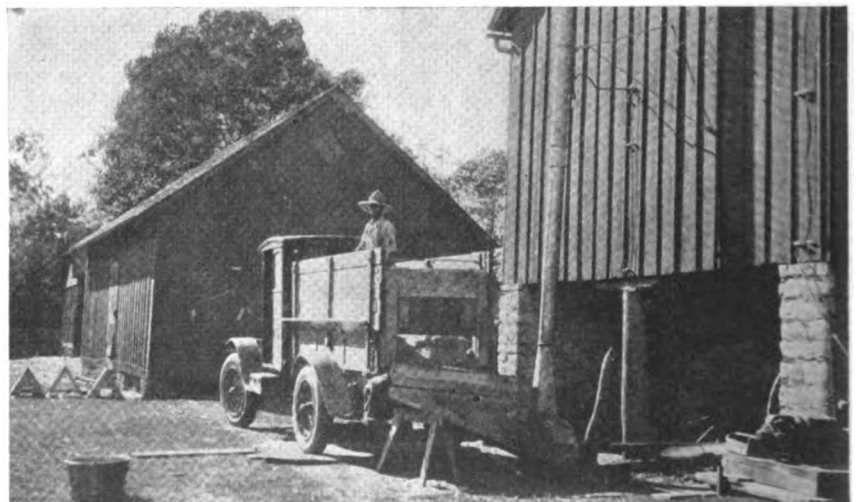
Why Wood is Sold by Cord, Not Ton

BECAUSE of a lack of uniformity in practice as to what constitutes a cord of wood, the suggestion has been made that it be sold by weight, like coal. The specialists in fuel wood at the New York State College of Agriculture point out, however, that the confusion would probably be too great.

Practically every variety of wood has its peculiar weight, and the weight of a given piece of wood may vary 100 per cent, depending upon whether it is green or thoroughly dry.

Furthermore, wood possesses the power of absorbing moisture from the air or from the surroundings, and of giving it off again under dry conditions.

This means that the weight of a given amount of wood may vary from day to day, depending upon the atmospheric



An Electric Motor Operates the Blower of an Ensilage Cutter Which Carries the Grain Into the Bins.

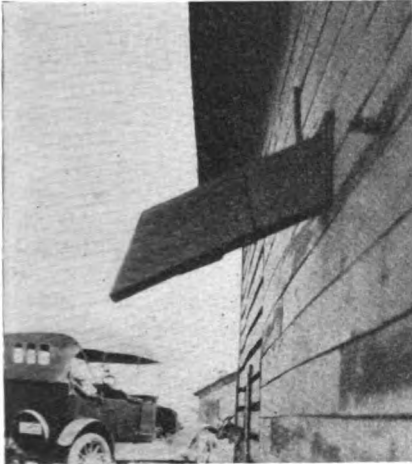
conditions. The variation will, of course, be greater than when the wood is left uncovered, and least when it is kept piled in a dry shed.

A cord of wood is a pile four feet high, four feet wide, and eight feet long.



Bin Chute Saves Loading

THE chute shown in the photo is novel for the fact that it saves the loading of grain in the wagon. It is located at a point slightly higher than the top of the box to be filled. But for wagons of varying height the chute has



Chute That Makes Grain Loading Easy.

been sawed in two and the upper adjacent edges of the cut hinged together. This allows for a tilting of the outer end.

The bin within the granary is filled with a power elevator on the other side of the building at threshing or shelling time so there is no unusually high wind-row to scoop thru.

The owner of this granary hauls most of the grain away by means of a wagon at different times during the winter when market prices best warrant it. A single shut-off gate starts and stops the flow.—D. R. V. H.



CAREFUL arrangement on the farmstead may save several days' work in walking in the course of a year. An extra distance of 200 yards walked in doing the chores each night and morning makes a total of 82 miles for the year.

WATER DIRECT FROM THE WELL



Milwaukee Air Power Pump Co.
Milwaukee, Wis.

Give Your Fordson a Fair Chance!

Equip it with the Governor it Deserves to Have

In the Fordson you've got the best little tractor in the world—give it a fair chance—especially in the matter of a governor. Don't "fall" for anything like a vacuum or belt-driven governor. No tractor manufacturer would even consider one of these types as equipment. Be satisfied with nothing less than the best in a gear-driven, fly-ball governor, which experience shows to be the TACO.

Over 50,000 TACOS now in use, hundreds of them on tractors for four and five years. Nine manufacturers now equip their tractors with TACO Governors. Why take a chance on anything else. Every TACO sold on an absolute guarantee.

TACO Ball-Bearing Belt Guide

You get your money's worth when equipping your Fordson with the TACO BALL BEARING Belt Guide. It will save its cost on one expensive belt and will outwear three or four of the cheaper belt rollers. Prevents belt from riding on axle and actually permits motor to show more power at the driven pulley. Price now \$7.25 f. o. b. factory.

TACO-MYERS Mower

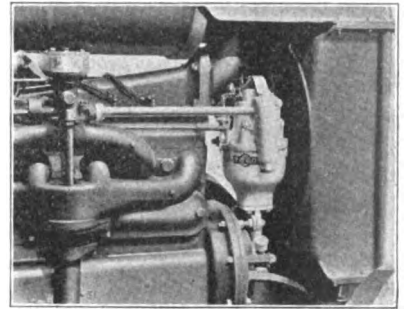
Attaches direct to Fordson. Write for catalog on this splendid mower.

See your Fordson Dealer or write us direct for more complete information on any of the articles in the TACO line.

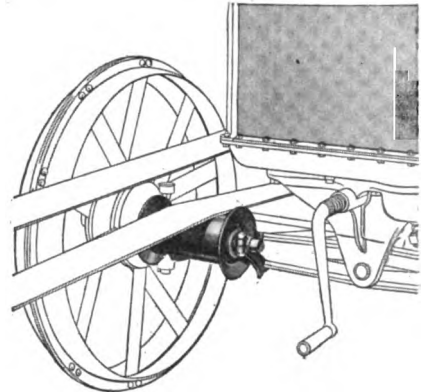
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Equipment for
FORDSONS



Taco Model "A" Fly-ball Governor for old style manifold Model "B" for new style manifold.



Indian Motorcycles

A REAL RUNABOUT FOR THE FARM

FROM house to outlying barns; from stable to distant fields; into town for emergency supplies—small wonder the farmer's working day is never long enough!

You can save money, time and strength by having at hand the quickest, and most economical "steed" ever ridden, the—

Indian Motorcycle

The INDIAN costs less than a good horse or a cheap auto. It will go seventy miles on a gallon of gasoline—over any kind of a road, or no road at all—and get there ahead of anything on hoofs or wheels.

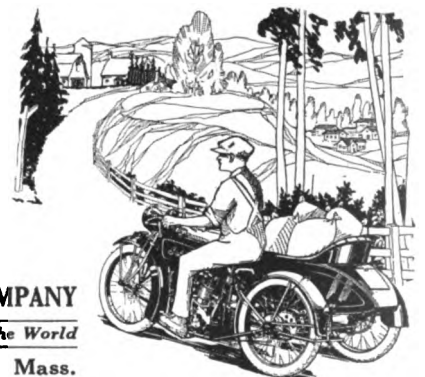
The Indian with side car is a combination of business and pleasure vehicle that every up-to-date farmer should have.

Send for free illustrated folder and price list of the new INDIAN models. Address Dept. F.

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Now ready to mail. Learn how "Silverized Silage" increases yield of farm stock. Our printed matter covers all styles and power cutters. Send for it.

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FARM LIGHT BATTERIES

for all makes of light plants. Powerful, long-lasting. Write for money saving prices.

Trade Mark Registered
VICTOR STORAGE BATTERY CO., Rock Island, Ill.



Our Readers Are Requested to Make Free Use of this Department for Questions and Answers on Modern Farming and Farm Improvements

Freezing Points of Battery

Editor FARM MECHANICS:

Could you please inform me thru the Mail Box Department of the FARM MECHANICS at what temperatures a 32-volt, 160-ampere house lighting battery will freeze? That is, at what temperature will the batteries freeze when they are charged, $\frac{3}{4}$ charged, $\frac{1}{2}$ charged, $\frac{1}{4}$ charged, and when empty.

I have been a subscriber for over two years and I like FARM MECHANICS very much. As long as the magazine is printed I shall be a reader. Each issue has in it a lot of valuable information. —NORMAN C. SHINNARD, Hazelwood, Ohio.

Answer—The following table will show the freezing points at the different specific gravities of the electrolyte in a storage battery. The size of the battery has nothing to do with the freezing point.

Specific Gravity	Charge	Freezing Point
1300	Full charge	96° below zero
1200	Half charge	20° below zero
1100	Quarter charge	15° above zero
1050	No charge	30° above zero

F. M. SERVICE.

Emergency Repairs on Ensilage Cutter

Editor FARM MECHANICS:

The friction clutch on a 6-horsepower kerosene engine, driving an ensilage cutter, gave considerable trouble by slipping, and finally got so bad it would not cut at all. We took the pulley off and took it back to the implement people who sold it, and they told us nothing could be done except to send it back to the factory and have a new core put in. We were within a day and a half of finishing filling the silo, and had the teams and men and weather, and did not feel that we could wait the necessary time. We decided, on their advice, to try to wire spoke of engine and pulley together, but found on doing so that we could not start the engine. So we took the friction pulley to pieces, and found the bearing surface worn. By cutting a ring out of a sheet of tin and putting in, and reassembling

clutch, we finished filling silo, and still the clutch is working good. How long this ring will hold we do not know, but in an emergency it carried us thru two days' work. We started and stopped about ten times a day.—DUDLEY F. CLAPP, East Windsor Hill, Conn.



National Campaign for Consolidated Schools

THE United States Bureau of Education, backed by the American Legion and the National Education Association, will promote a third annual week of education December 3 to 9. President Harding will issue a proclamation, probably before this is read, calling upon the people of the country to observe the week. The purpose of the week is to center attention upon the needs of the country's schools, more than two-thirds of which are still one-room schools. The needs that are to be emphasized are Americanization, more adequately equipped buildings, better paid teachers, improvement of rural schools and physical education and hygiene.

Regarding the promotion of consolidated schools, the U. S. Bureau of Education says:

"Consolidation has proved itself to be one of the best ways of changing very poor schools into very fine ones. It has not yet failed where it has been intelligently planned and worked out. There are 12,000 or more successful consolidated schools, and new ones are being established in considerable numbers every year.

"Here is what the consolidated school of the better class may, and in many cases does, offer:

"A school term of 180 to 200 days with a considerable amount of interest in the child and his activities maintained during the vacation period. This time element is one of the first and most necessary factors in maintaining an equality in the amount of training given children.

"A considerable choice of subjects, including classes in agriculture, farm

mechanics and manual training, in addition to the essential ones, so that the child may follow the lines of his own interests or necessities.

A group of professionally trained, experienced, and supervised teachers with whom he may become acquainted. By the simple mathematical law of chance, if nothing else, he is more apt to find in a number of teachers than in the individual teacher the things necessary for his growth. There are more minds brought to bear on his problem.

"School buildings and grounds designed to safeguard and promote the children's health, supply them with an abundance of mechanical means necessary for work and recreation, and develop in them an idea of the aesthetic. In this respect the consolidated school of the country has many natural advantages over even the best of the city schools. More room for play space, gardens, and outside laboratories may be had for less expense. There is greater freedom from annoying noises and much less danger from traffic.

Acquaintance and companionship for each child with a considerable number of children of his own age and stage of development to train him in ready social adjustment and give him the confidence that rises from competition with equals.

"Contacts for each child with groups of children in the natural stages of development immediately succeeding his own. They rouse his spirit of emulation and furnish incentives to the effort necessary to make him active and self-reliant.

"The services of a physician or nurse or both to prevent or stop in its inception any sickness among the children.

"Means of interesting the community in the betterment of its own life to keep pace with the ideals set before the children.

"Transportation, sanitary and safe, to and from school for all children residing any great distance from the school plant.

"These things, characteristic of the better consolidated schools everywhere, are the hall marks of the best schools now known."

Farm Facts

Condensed Items of Interesting Information

Canadian Potato Growers are trying to find an outlet for their big crop this year. Owing to the excellent American potato crop they do not find a market in this country and the Canadians are turning to Cuba, Mexico and the West Indies.

Between 135 and 150 tractors are in use in Chile, most of which are of American make. Cheap labor, small cost of upkeep of oxen which are generally used on farms, and the lack of aggressiveness of the farmers who are satisfied with crude methods and small crops are reasons why tractors have not taken a greater hold in this South American country, the American commercial attache at Santiago says.

More phosphorus rather than more potash is the great soil need, experts at the New York State College of Agriculture say. Not until 300 pounds of acid phosphate to the acre have been applied annually should the farmer think of putting money into fertilizer containing as much as 9 or 10 per cent of potash, they advise.

German hogs and their owners are having a difficult time, say reports coming to the U. S. Department of Commerce. Before the war hog raisers fed the animals on cheap Russian barley, which cannot now be had. Potato crops in Germany during the last three years have been one-half pre-war yields, while their consumption by humans has increased 50 per cent. Table scraps or garbage comprises most of the hog feed.

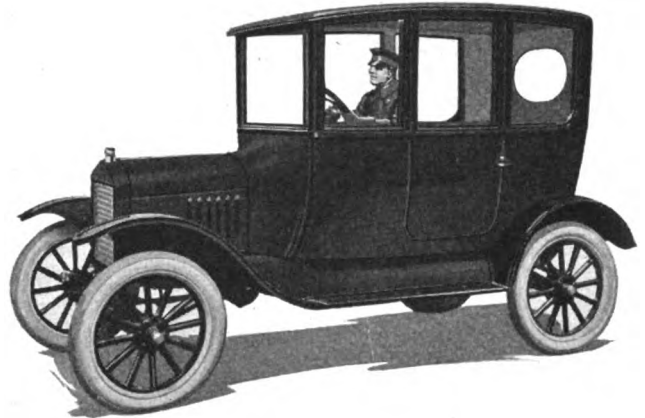
Exports of Agricultural Implements during August amounted to \$3,352,657, which is the first time the \$3,000,000 mark has been reached for more than a year.

The Russian knapweed is a new pest that has made its appearance in Idaho. The seed was imported from Turkestan, Asia, mixed with alfalfa seed, and as knapweed seed were not listed as noxious, the shipment could not be rejected. The knapweed is similar to and a member of the same family as the old-fashioned bachelor button.

India's 1922 wheat crop totalled 9,813,000 tons, making this country the third largest wheat producer, with the United States first and Canada second.

Daddy! Want a ride in my Ford Sedan?

Size, over all, 6½"
Wheel base, 5"
Weight, 2 lbs.
Painted in black
with gold stripe
Removable
chauffeur



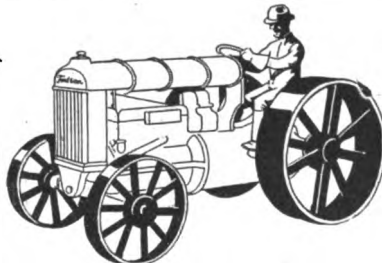
CHILDHOOD DAYS SHOULD BE HAPPY DAYS

LET them be the happiest moments of his life. When he grows up he will be grateful to you for making happy his play days.

They Last Indefinitely—No Clockwork to Get Out of Order

Honk! Honk! Clear the way for the little speed demon as he races around the house with his brand new Ford Sedan. When bed time comes, he parks his car in the garage (beneath the bed). He'll be a great help to Dad and Mother now—he'll drive to the store for groceries or run other errands.

Here's Another! A Baby Fordson for Baby Farmers!



"Daddy, I can help with the plowing now. See! My Fordson's got wheels that turn and does everything jes' like yours."

Red wheels, grey body, and gold trimmings. Length, 6 inches; height, 4½ inches; weight, 1½ lbs.

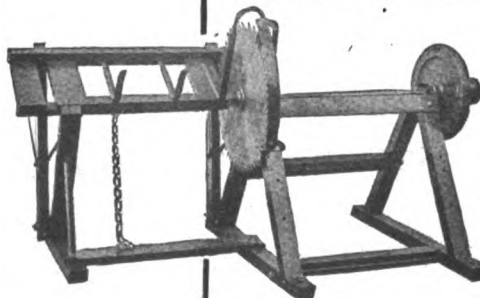
Your local dealers should have these two toys

DEALERS! 4,000,000 FORD OWNERS ARE YOUR MARKET on the Toy Ford Sedan. Your farm trade and city folks will be delighted with the Toy Fordson. They buy them for their children or for mantel ornaments. Write for prices and circular showing free display material.

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There's Money in Sawing Wood



You'll need more wood for your own use this winter.

So will many of your neighbors, and all of them will not be equipped with a good saw.

Get yours today, saw your own wood, saw wood for your neighbors and make some money while you're doing it.

FREEMAN MFG. CO.
200 Lakeside Ave., Racine, Wis.



Gas Engine Means Time Saving

By Mrs. DORIS W. McCRAY

WHEN I. C. Kolsto, who lives near Newhall, Iowa, bought his wife a gasoline engine he was at the same time presenting her with 52 extra afternoons for every year that they will have the engine. It used to take her all day Monday to do the washing for five persons and the extra table and bed linen occasioned by frequent company. She then used a hand-power machine which was naturally faster than rubbing on a board. Now she hitches the gasoline engine up, and lets it do the washing for her.

After the breakfast dishes, she starts the washing going, which is about 7:30. While the first machineful is being rubbed she makes starch, shakes out stockings, and does odd jobs. Then while the next machineful is being washed she rinses and hangs the first bunch of white clothes. Sometimes she has as many as ten machinefuls. She used to be so weary at the end of a day of turning the machine that she was just too tired to sleep, for the hospitality of her home makes visitors frequent. For this large washing the engine takes only half a gallon of gasoline, and half a pint of oil, which, at present prices, amounts to less than 20 cents. At 10:30 she is thru washing,

and often has the clothes all hung by this time. With the washing all done, she can get dinner, then go to a Farm Bureau meeting or do some sewing in the afternoon.

Separating the milk from four cows takes about 10 minutes. With the gasoline engine doing the work, she is free to cook breakfast, or supper. The speed is regulated by the pulleys. Twenty minutes a day are saved, but for the wife of a dairyman the saving would be greater. The engine can also be used to churn, and if the milk is the right temperature at the start, it takes but a few minutes.

In this strictly modern house there is a bathroom upstairs, sink in the kitchen and basement, and toilet and lavatory on first floor. The engine pumps water to fill two tanks of 100 gallons capacity each.

The gasoline engine which the Kolstos use is one and one-half horsepower, and cost \$45 four years ago. They consider it has been a real investment measured by the time it has saved them.

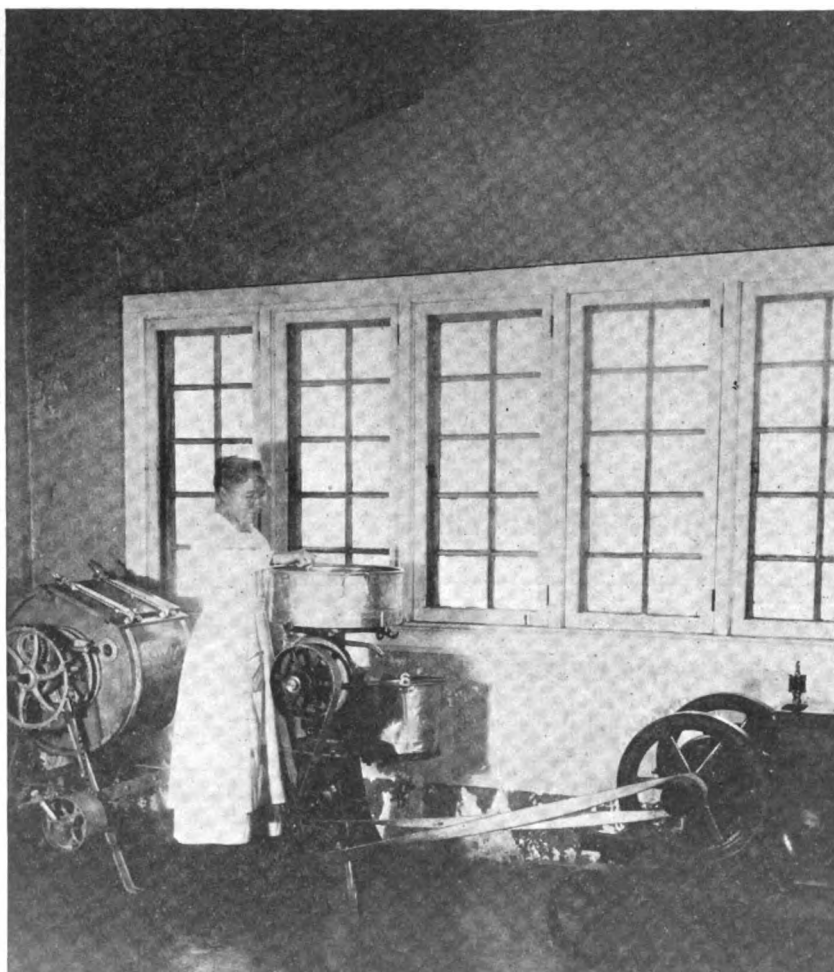


Making the Kitchen Convenient

IN arranging kitchen equipment the first consideration is to save time and labor. About 120 square feet is sufficient size for the room, and it should have two windows, with oil enamel painted walls or oilcloth paper covering. The colors used should be light, especially for a northern exposure. White scrim, muslin or checked gingham are most suitable curtain materials as they let in the light and can be laundered often.

Kitchen equipment consists of a range or oil stove, a sink and drain 32 inches high—more if the worker is tall—a work table with shelves and drawers, a china and food cupboard. A dish towel rack, towel rod, covered garbage pail, clock and a wall fastener where such utensils as spoons, egg beater, measuring cup and knives can be hung, all add to the convenience of the kitchen.

Location is important in making this workshop attractive. The sink, stove, table and cupboard should be placed close together, a good arrangement, if



A Gasoline Engine Mounted on a Truck Provides a Portable Power Plant That Cuts Labor on All Parts of the Farm, and in the Home Especially.

possible, is to have the cupboard at the right of the sink, the work table at the left and the stove just opposite. The stove should be placed so that a good light falls into the oven when the door is open. A soft rug placed before the work table, when the housekeeper cannot sit on the stool, makes feet less weary.



Washing Woolens

WOOLEN DRESSES may be washed successfully if the proper care is taken. First brush garments well, especially inside the seams where the dust is likely to accumulate. Mark soiled spots with white thread. Run basting threads just inside folded edge of plaits. Avoid change of temperature to prevent shrinking. Wash and rinse in warm water and then dry in a warm, not a cold, place. Make a soap solution by dissolving any pure soap in soft water. Squeeze garments with the hand, but do not rub on the board. Do not rub soap on the garment, as it mats the fibers. Squeeze, not twist, the water out. Many soiled garments should be run thru two waters and rinsed twice. Hang skirts on hangers by the waistband and dresses and waists on hangers. Press the garment on the wrong side while still damp, using heavy pressing cloth over the wool. Do not use too hot an iron, as it stiffens the wool.



Cottage Cheese

WHY not use more cottage cheese? It is a nutritious food, easily prepared, besides furnishing body-building fat, yet its possibilities as a food are often overlooked by housewives. Freshly soured milk makes the best cheese, but natural souring should not be too slow. A commercial starter can be used when making large quantities of cheese, allowing a package of this starter to a pint of milk. That makes the "mother," a tablespoon of which should be put in every gallon of skimmed milk to be soured.

When the milk is firmly clabbered, cook it slowly or let it stand under boiling water for several hours until the curds form. Then rinse and drain thoroughly, so the sour taste will be removed. Mix cheese with seasoning and serve with cream.

Or it can be used as sandwich filling, combined with olives, pimento, jellies and nuts. Cottage cheese is also delicious in salads, used as stuffing for prunes and peppers, or rolled in balls and served with pineapple and dressing.



ONE small pane of window glass will keep many a smudge off the pages of the cook book.

Make Your Wood Lot Yield Annual Dividends

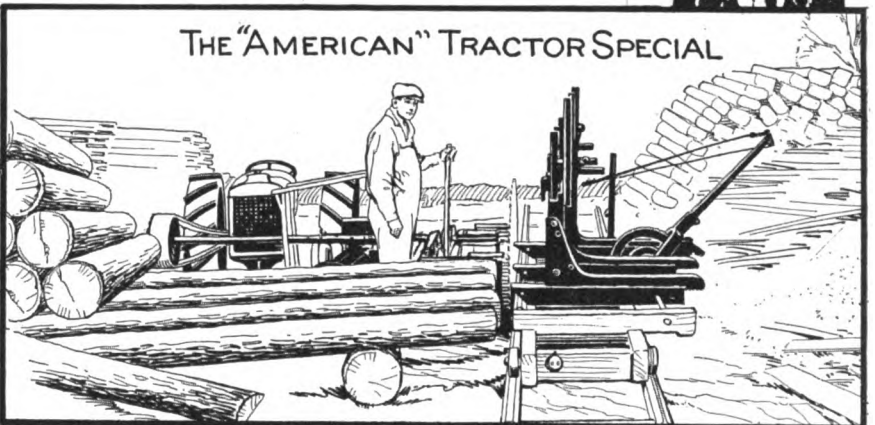
CUT dividends from your timber tract. From a 20 acre timber tract you can cut lumber products worth \$300 to \$400 annually without impairing next year's yield.

All you need is an "American" Tractor Special Saw Mill. Your tractor—a Fordson, Samson, I. H. C., Hart-Parr, Oil-Pull, Cletrac, Avery, or any two plow tractor or gasoline engine furnishes ample power. Portable, easy to operate, economical to run. Larger sizes for larger power.

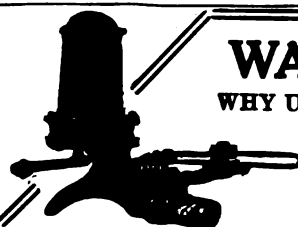
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"American" PORTABLE Saw Mill



THE "AMERICAN" TRACTOR SPECIAL



RIFE Hydraulic RAM

WATER WITHOUT FUEL

WHY USE gasoline, coal and oil when your water can be pumped without the cost of either. The prices of all are advancing steadily. Now is the time to economize by using labor-saving and expense-free machinery.

The Rife Hydraulic Ram will give you a permanent water system without care, fuel or upkeep—if you have a spring or stream on your farm with a fall of 3 feet or more and a flow of 3 or more gallons a minute.

The Rife Ram works day and night, winter and summer. It requires no repairs and no labor; there is nothing to get out of order. Someone near you is using a Rife Ram and will verify this.

Our experts will advise you fully how to install and use the ram. This service is yours for the asking. Write today.

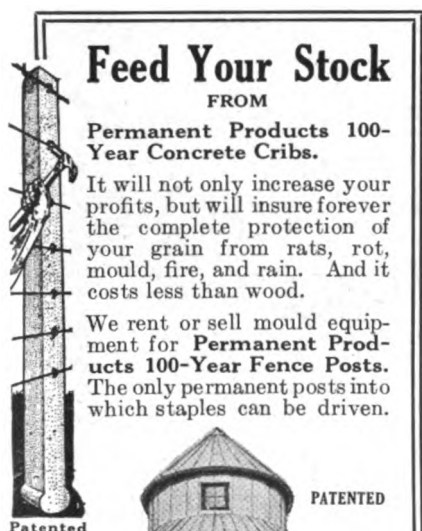
RIFE ENGINE CO., 143 Cedar Street, New York City

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Permanent Products 100-Year Concrete Cribs.

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We rent or sell mould equipment for Permanent Products 100-Year Fence Posts. The only permanent posts into which staples can be driven.



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Marquette Bldg. CHICAGO, ILL.

Keep Musterole on the bath-room shelf

Years ago the old-fashioned mustard plaster was the favorite remedy for rheumatism, lumbago, colds on the chest and sore throat.

It did the work all right, but it was sticky and messy to apply and my how it did burn and blister!

The little white jar of Musterole has taken the place of the stern old mustard plaster.

Keep this soothing ointment on your bathroom shelf and bring it out at the first cough or snuffle, at rheumatism's first warning tingle.

Made from pure oil of mustard, with the blister and sting taken out, Musterole penetrates the skin and goes right down to the seat of the trouble.

Order Musterole today from your druggist. He has it in 35c and 65c jars and tubes; hospital size, \$3.

The Musterole Co., Cleveland, Ohio
BETTER THAN A MUSTARD PLASTER

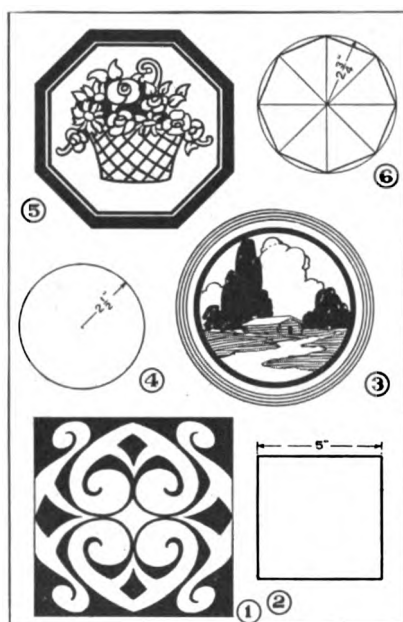


SOMETHING THE GIRLS CAN MAKE

Wallboard Gifts

WALLBOARD is so extensively used for all sorts of purposes that it can be had almost everywhere lumber is sold. It is nice material to handle in making things, too, as it can be sawed the same as a board, or cut with a knife, and rough edges can be sandpapered smooth. And when it comes to finishing, you could not wish for a better surface to decorate.

Table mats for hot dishes are always in demand, and wallboard is good material to cut them out of. Figures 1, 3 and 5 show three designs. The dimension for the square mat (Fig. 1) is given



in Fig. 2. The shape is severe, but offers good opportunity for decorating with a conventional design. You can copy the design given in Fig. 1, or make up one of your own. Of course, if you can make your own design it will be so much better. Mark off the center of each edge, and draw lines thru opposite marks. This will give you the center of the piece, and two center lines to guide you in laying out the design. To make the design symmetrical, lay out one-quarter of it, trace it off upon a piece of tissue-paper, and transfer it to the other three-quarter sections.

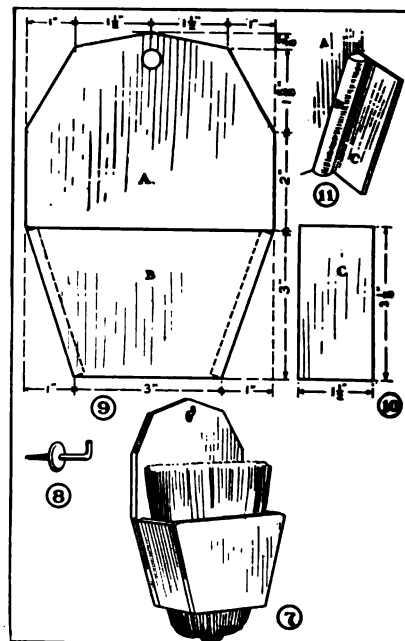
Enamel paint in different colors can be purchased at the paint store in small cans, and it is best for decorating wallboard articles. One color should be used for a background, and a contrasting color for the design, with perhaps a third color for a border, where a border is added. Use small brushes with which to apply the enamel.

The circular mat (Fig. 3) has a radius of $2\frac{1}{2}$ inches. If you haven't a compass

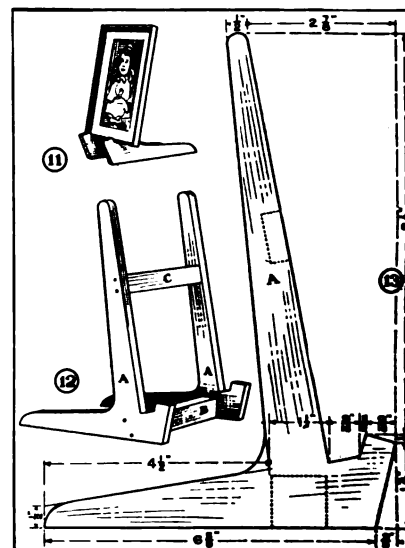
with which to describe the circle, use a saucer to mark around, or make a compass of a strip of cardboard with a pin stuck thru it near one end, and a pencil thru a hole at the right radial distance from it.

The octagonal-shaped mat should be laid out as shown in Fig. 6. No doubt you know how to inscribe an octagon in a circle in the manner shown.

A whisk broom holder like that shown



in Fig. 7 is easy to make. Dimensions for the back (A) and front (B) are given in Fig. 9, and for the sides (C) in Fig. 10. Figure 11 shows how to fasten the pieces together with a short piece of moulding or other stick (D) placed in the corners to nail to. Make a small hole thru the back piece, and get a small brass hook (Fig. 8) for a hanger for the holder.



Figures 11 and 12 show a neat design for an easel for a small picture. It is made of four pieces, two uprights (A) of the shape shown in Fig. 13, and a crosspiece $\frac{3}{4}$ inch square by 3 inches long (B), and a crosspiece $\frac{3}{8}$ inch thick, $\frac{3}{4}$ inch wide and 3 inches long (C).

The uprights are cut out of wallboard, but the crosspieces are wooden strips so the uprights can be nailed to their ends.

Most of the dimensions for uprights (A) are shown in the diagram of Fig. 13. You can draw the curves free hand. If you saw out these pieces, you can cut the two at one time. Sandpaper the edges of the pieces with fine emery-paper before assembling them.

The easel will look best with all surfaces enameled in one color.

(Copyright, 1922, by A. Neely Hall).



New Mexican Fruit

A NEW fruit combining the luscious taste of the peach and the tang of the almond has just been produced by Dr. Juan Balme, plant wizard of the Mexican horticultural department, after years of experimenting. Seven years ago Dr. Balme began the work of fertilizing the blossom of the peach with the pollen of the sweet or edible almond, says a report just received by the Department of Commerce from its representative in Mexico City. Prior to this he imported from the United States trees of a fine, juicy sweet freestone peach and of the fine paper-shell almond grown in California. What Dr. Balme has done is to eliminate the useless bitter kernel of the peach and substitute in its place a valuable article of commerce. The new seed looks like the edible almond and, while a little thicker than that of its maternal ancestor, the shell has the fibre of the almond shell and the kernel is of the size, consistency and taste of the edible almond. The flesh of the new fruit is sweet and juicy and agricultural experts think it superior in delicacy of flavor to its paternal ancestor—the peach. The new fruit is called the peachmond.



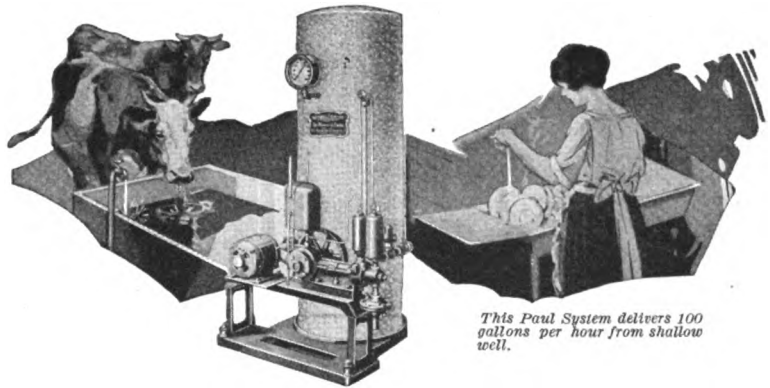
Act promptly against hog cholera, warns the Nebraska College of Agriculture. Watch for the first signs and when the disease is discovered few losses will result if the herd is treated at once.



IF most good farmers took as much care of a crop after it was made as they did while making it, they would be still better farmers.



SOME housewives save the empty ice cream and oyster pails; they're just the thing when you have to put up a small lunch.



This Paul System delivers 100 gallons per hour from shallow well.

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Remove your old gas cap, throw it away. (The next time you run across the pieces of your measuring stick, throw them away too.) Then screw in the TASCOS gas gauge and that's all.

Now whenever you wish to know exactly how much gas you have, merely lift the cushion and there you are.

TYPE "A" is used on the old style roadster with round tank, and also on the old style touring car.

TYPE "B" medium length, is used on the new touring car and roadster with oval tank.

TYPE "C" short length, is used on the square tank for sedan and coupe, also Chevrolet "490".

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Name

Address

\$1.25



Tractor on Stony Land

To the Expert:

Being a subscriber to your magazine and knowing your willingness to help the farmer, I take the liberty to ask for advice.

We own a farm in the Catskill Mountains of New York—that is, my father, a brother and myself. No doubt you have heard or possibly seen how terribly stony and hilly that country is. But our land is more level than most farms in our neighborhood. And as for stones, it has its share of blind ones, fast ones and all kinds of them. My brother and myself think we could use a tractor on our land to good advantage. My father and most neighbors don't think so.

We would all appreciate your opinion.
—I. TENNENBAUM, Woodbourne, N. Y.

Answer—The light, one and two-plow tractors have been developed to the point where they can replace horses almost any place that horses are used. There is no reason that we can see why this cannot be done in your case as tractors have and are being used in many parts of the country where the soil conditions are as bad if not worse than where you are. There are still many people that are not aware of the tremendous development of the tractor in the last few years, but the time is rapidly approaching when the farmer who has not kept up with the advanced ideas of power farming will not be able to compete with those who have.—F. M. SERVICE.



Two-Bearing Crankshaft

To the Expert:

What has been your experience concerning a four-cylinder, two-bearing motor? I am contemplating a purchase of a motor, 3½-inch bore and 4½-inch stroke, 1,000 r.p.m. It is a two-bearing job. Crankshaft is 1¾-inch in diameter.

Do you think there would be excessive tension on the crankshaft?—G. H. RUDD, Perry, Ohio.

Answer—If the motor has been designed by expert gasoline motor engineers, there is no reason why it should not give good results with a two-bearing crankshaft instead of three.

Some of the best light four-cylinder

Mr. Service will answer free of charge for Farm Mechanics readers questions of general interest on Automotive troubles. As a "trouble shooter" he is probably the best equipped man in the industry, having diagnosed the ailments of thousands of automobiles, trucks and tractors. Put your troubles up to F. M. Service—Editor.

engines made have only a two-bearing crankshaft and there is no record of them ever having trouble with the crankshaft or its bearings, other than is generally had on any gasoline engine.—F. M. SERVICE.



Power on Crawler Drives

To the Expert:

I would like to have you tell me as nearly as you can from my statements the answer to the following question:

On which track of a tracklayer tractor does the most strain come upon turning a corner; that is, for instance, upon turning a corner while plowing you were turning to the left would the strain come on the left track? If so, explain the reason why it does.—HARVEY FINCHOW, Dixon, Calif.

Answer—The strain is equal on both tracks when a tractor of the crawler type is turning a corner either to the right or to the left. This is due to the differential or equalizer gears that connect each track with the other thru the main line of drive from the motor.

This same thing is true in an automobile when rounding a corner and is affected in the same way by the differential gears that allow one wheel to turn faster than the other but delivers equal pulling power to both as long as the traction is the same. However, if the traction is greater on one track than the other, and allows one to skid, then the power is delivered entirely to this track as power like electricity follows the line of least resistance.—F. M. SERVICE.



Motorbus of Sedan

To the Expert:

As a subscriber to your magazine, I

would like to know if I could change a four-cylinder Maxwell sedan into a small bus to carry about 10 or 12 passengers. No hills to climb and new body will be lighter than the old sedan body.—P. GOECHE, Red Bank, N. J.

Answer—There is no reason why you cannot change over your Maxwell sedan into a small truck, tho it would be necessary to change the rear springs if you intended to carry as many as 12 passengers. This many people would mean an extra load of more than 1,500 pounds, and the present spring suspension would not stand this additional weight. Also the seats in your new body must be built as close to the center of the chassis as possible, because if you have too much overhang on the rear end of the chassis, there would be trouble experienced with the front system not being held to the road and it would also place a tremendous strain on the rear axle. Any good spring company could build the extra heavy springs, which should be capable of taking a load of 2,000 pounds.—F. M. SERVICE.



Trailer for Fordson

To the Expert:

I am writing you in regard to a trailer for a Fordson. I have a Pulford and want to build a box on the two large wheels if it would be all right. Perhaps you know something of the construction of a Pulford. There is a clearance of 4½ feet between the wheels. There are roller bearings in the wheels. The axle is a 2-inch bar. Shall enclose picture of wheels, but if all right to use, shall remove plugs, extra frames and large gears.

If all right to use, please give me advice as to size of box to make and how large a load can a Fordson pull over a Federal road? Is the 2-inch axle large enough? Thanks.—CLYDE COULTHARD, Gravity, Iowa.

Answer—You should be able to make a trailer of the Pulford that will be able to carry a load of from three to five tons without trouble. The 2-inch axle will carry this load without difficulty, but in constructing the trailer, be sure and place the axle squarely in the center of the

box and also be sure and place the draw bar as low on the trailer as possible so as it will come as near in a straight line with the draw bar cap on the tractor as it can. If the pull is not straight, considerable power is sacrificed. There is no restriction below five tons on the load that can be carried on a Federal road, but there are laws in different states on the kind of tread the wheels of the tractor and trailer must have, and where the tractor is used as a pulling unit, it generally is necessary to equip it with rubber wheels. You would also have to remove the lugs on the trailer wheels.

The box for the trailer should be about four feet wide by ten feet long, with a depth of twenty-four inches.—F. M. SERVICE. ❀

Battery Cell Broken

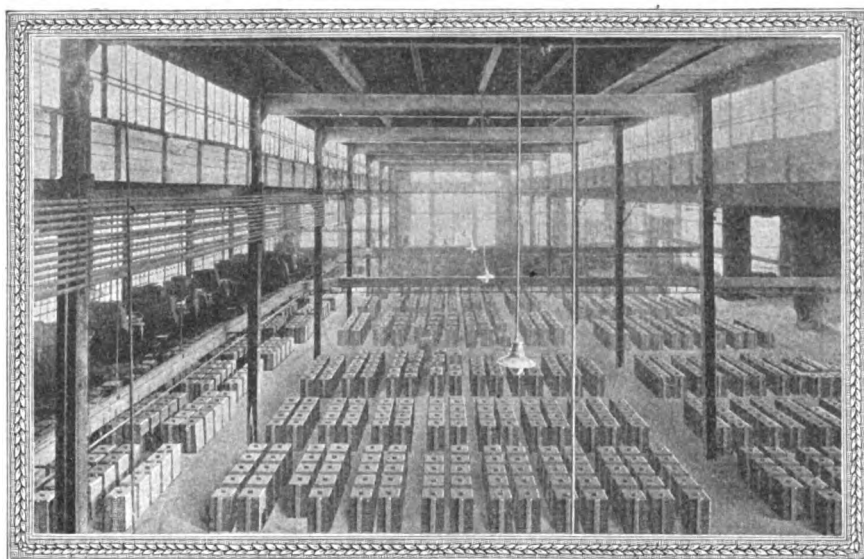
To the Expert:

Please answer the following questions: I have a Ford battery that leaks in one cell. Is there any way to fix it besides having a new cell put in?

My car hits on all four cylinders, but doesn't seem to have the power that it should. Do the valves need grinding? It has run about 2,500 or 3,000 miles. Would washers on the valve stem help any in cleaning off the cylinder head? There are one or two valves that look red. What is the cause of that? Could anyone get copper or brass transmission linings and would they be satisfactory?—BERRY CASEY, Boxley, Ark.

Answer—There is no way to repair the broken cell except to replace the jar. This is of hard rubber and when once cracked cannot be fixed.

The lack of power in your motor is probably due to the valves needing grinding, and the fact that some of the valves are of a red color proves this, as when they don't seat properly, the exhaust goes leaking past and burns the valve to a deep rust color. When grinding the valves be sure that both the valve seat and the valve itself show a good clearing where the valve grinding compound has cut and that all the pits and ridges are ground out. You should have no need of valve space washers between the valve stem and the tappet as there will be no excessive play in a motor that has only gone 3,000 miles. Instead, care should be taken that there is the correct clearance between the stem and the tappet after the valves are ground and when they are fully closed. This correct distance is never greater than one thirty-second of an inch, and never less than one sixty-fourth of an inch. This means that when the valve is closed you should be able to slide an ordinary calling card between the valve stem and tappet.—F. M. SERVICE.



World's Foremost Piston Ring Foundry

FOR over forty years—in fact from the inception of the internal combustion engine, until 1914—no advance was made in piston ring design, which was worthy of the name. In spite of the best efforts of inventors and engineers, to devise a more efficient piston ring than the ordinary, "leaky" diagonal-cut, plain surface piston ring generally used in engineering practice, no satisfactory solution of the problem was found.

The invention of the Burd High Compression Piston Ring in 1914 marked a new era in piston ring development.

The invention of the Burd Quick Seating Ring in 1920, marked a still greater advance in piston ring design. It revolutionized piston ring manufacture, and won the instant approval of engineers and mechanics because it combined the quick seating feature of a narrow ring, with the wall tension of a wide ring.

The latest achievement of our engineers—the perfection in our foundry of the Burd Process of Cycloidal Pattern Development—is the greatest improvement that has ever been made, in all the history of piston ring design and construction.

This entirely new process—the Burd Cycloidal Pattern Development—makes it possible for us to produce in our foundry

—a truly round, concentric piston ring from individual castings.

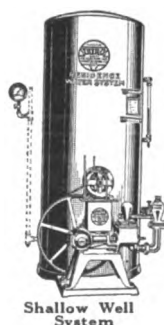
By a scientific and mathematically accurate formula, a pattern shape (a cycloid) is secured, from which the casting is made. This casting, machined to certain definite limits, produces a finished piston ring, which, when placed in the cylinder, contacts with the cylinder wall at all points, with an even, uniform pressure.

This new process of pattern development enables us to **cast the tension into the ring.** No artificial methods are necessary—no peening—no hammering—no "heat treatment." The tension results from the shape of the pattern—the special analysis of the iron used to make the piston ring casting—and the definite care, and exact methods employed in the various machining operations. **There is no guess-work.** The finished product is the result of an infallible mathematical determination.

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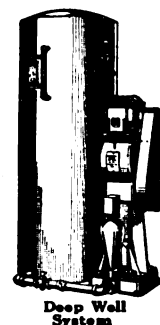
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Any windmill which does not have the gears running in oil is only half oiled. A modern windmill, like a modern automobile, must have its gears enclosed and run in oil. Dry gears, exposed to dust, wear rapidly. Dry bearings and dry gears cause friction and loss of power. The Aermotor pumps in the lightest breeze because it is correctly designed and well oiled. To get everlasting windmill satisfaction, buy the Aermotor.

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DIGGIN' POTATOES?

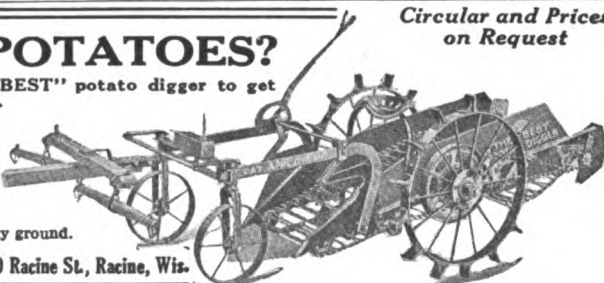
Then You'll need a "BEST" potato digger to get them all fast and clean.

Built soundly, mostly of steel, yet light, the "BEST" potato digger is easily pulled by two horses.

Shovel is 22 1/2 inches wide—can be raised or lowered from the operator's seat.

Special attachment for stony ground.

The Wabers Mfg. Co., 1720 Racine St., Racine, Wis.



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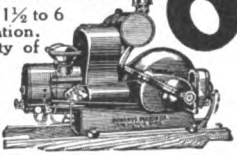
My Engine Will Do the Work of 6



Write now for facts about this wonder engine. Same engine gives 1 1/2 to 6 H. P. Gasoline or kerosene, portable, light and free from vibration. No cranking. Pumps, saws, grinds and does all chores. Plenty of power for every purpose. Easy to operate.

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Power of Ford Going up Hills

To the Expert:

To settle a dispute, please give me information on the following subjects:

1. A tractor fails to negotiate an incline. Will its ability be increased by adding weight to it? I have heard engineers say a loaded truck would go up a certain hill but empty fail because of less traction. Is this correct? My own experience doesn't confirm this at all. Please give answer in detail and as scientific as possible.

2. I wish to put an added weight of 2,700 pounds on a Fordson tractor. It's a spray tank. Could the Fordson pull it? We have some hills and ground cultivated. Please confine answer to weight and whether Fordson could do it or not, the idea being to obtain accurate scientific information.

Thanking you in advance and trusting you can supply this information.—
HOWARD C. ALDRICH, Coplay, Pa.

Answer—What the engineers say regarding a tractor being able to make a steep hill better with a load on the drive wheels is correct, providing the load is placed on the tractor and not on the trailer being pulled. A tractor may have the power to pull up any incline, but unless the drive wheels have enough weight to grip the ground without slipping, they will simply spin around and the tractor stand still. As an example, a Fordson tractor will easily move a five-ton load if it is being pulled on a smooth, hard road, but if a soft, sandy spot is reached, the tractor will not be able to pull the load, but will stand still with the rear wheels turning, and if left running will bury itself to the crank-case and axle housing. This is a good example of where the tractor has enough power to pull the load, but not enough traction on the drive wheels.

An added weight on your Fordson of 2,700 pounds will have no effect on its pulling ability and you will have no difficulty in taking this additional weight any place the tractor will go by itself.—
F. M. SERVICE.



Ford Back Fires

To the Expert:

Some time ago my Ford car gave me considerable trouble. The firing was uneven. There was considerable spitting back thru the carburetor, especially when going up grade. The trouble seems to have been in the ignition. Please tell me how a dirty spark plug or commutator or a bad coil could possibly cause firing thru the carburetor. I can understand how too lean a mixture might cause this,



5 Facts

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Full Gauge Wires — Good Galvanizing — Firm Knots — Stiff Stay Wires — Live Tension—these are five features that must be embodied in the fence you buy if you want a fence that will give you long service and satisfaction.
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That's why Square Deal Fence is the fence demanded by farmers who are careful buyers. Because it is built right with full gauge well crimped strand wires; with heavy stay wires firmly locked to the strand wires so wires can't slip or spread. It stands tight and trim for years. It is rust resisting and requires fewer posts.

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A REAL HUB CAP, made of aluminum, can't rust, highly polished. Wrap one dollar bill in this ad for full set of your caps. Will greatly improve the looks of your car. Guaranteed to be satisfactory, and please you, otherwise money refunded.

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 Gives useful information and tables, describes all kinds of saws for wood and metal cutting. Send your address to

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as it would fail to burn fast enough to be out of the way before the intake valve started to open, but this case puzzles me.

I have read your answers to a great many inquiries in FARM MECHANICS, but have never heard a satisfactory explanation of the above trouble.—NORMAN ALEXANDER, Apex, N. C.

Answer—The reason why you have never read an explanation of the valve trouble you describe is because the trouble is not in the valves at all, but is caused by a short in the ignition system. This causes one cylinder to fire all the time—or, in other words, there is a constant spark jumping at the spark plug in the cylinder that has its primary wire or timer contact shorted. As can be seen, the charge is exploded even as it enters the cylinder and consequently causes a back fire thru the open inlet valve.

A short of this kind generally is found to be a bare spot in the primary wires attached to the timer that is resting on the metal of the motor, or sometimes is a break in the insulation of the contacts in the timer shell, but is never caused by a coil or spark plug. It can always be located by removing the coil box covers and listening to the buzz of the coil units. The one that fires the plug that is shorted will buzz all the time, while the other will buzz intermittently as the contact is made and broken by the timer roller.—F. M. SERVICE.



Fordson on Big Separator To the Expert:

Three of us own a Case 28 by 50 separator but have no engine. We hired an engine this fall to pull it. As there are but few of the larger engines in the neighborhood we cannot always be sure of getting one when we want it. We have a Fordson tractor and would like to know if there is any way to belt two Fordsons to one separator and if so, how we should go about it.—R. H. BACON, White City, Kan.

Answer—It would not be advisable to attempt to hitch up two Fordsons to pull your large separator, for unless the motors could be throttled to pull absolutely together, good results could not be obtained.—F. M. SERVICE.

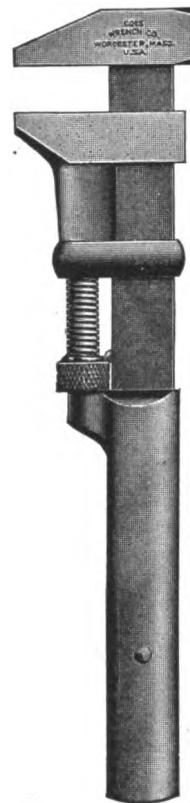


IF fresh air was good for us this summer, why not now? Pile on the clothes, but leave the windows open.



BEFORE you decide to paper that dingy room, try sweeping down the walls with a clean broom, finishing them off with a dry cloth. It may save you a papering bill.

COES WRENCHES



On the modern farm where everything is being done by machinery, you will find that Coes Wrenches are helping to keep each and every machine in first class running order.

Coes Wrenches are built to give better service and last longer than any other wrench on the market.

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If you operate any Farm Light and Power Plant, you want to know about our special Battery Exchange Offer. We take your old, spent batteries, make you a liberal allowance for them and renew your plant with the famous Universals, specially designed for your particular plant.

These time-tested long lasting batteries deliver a constant dependable flow of current. They make your lights burn brilliantly and steadily—no flickering—and provide abundant reserve power for heavy duty. As standard equipment on many of the best Farm Light Plants, thousands of them are now giving uniform satisfaction everywhere.

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Battery Guide Sent FREE

No matter what kind of Plant you have, this interesting book will show you just how to renew the system with Universal Batteries. The right size for every Farm Power and Light System made. It also lists Parts for all makes of batteries. "Care of Batteries" is another valuable treatise, will also be sent free with the new Universal Battery Guide. When you write, mention brand-name and age of your present batteries so that we can give you the correct allowance figure. Write today. (133)

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WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

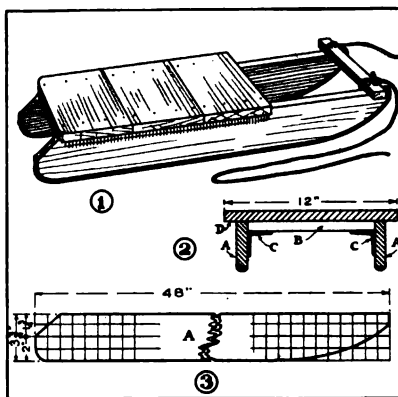
SOMETHING THE BOYS CAN MAKE

Three Toys for Christmas

YOU can have your fun in the making of these toys, leaving the fun of playing to your younger brother, cousin or other small relative.

One of the first things that comes to mind in planning for a boy's Christmas gift is a sled. Figure 1 shows a strong home-made model that will not cost you much or require much time to build. The cross-section of Fig. 2 shows the runners (A), crosspieces (B), iron angle braces (C), and the seat boards (D).

Cut the runners out of 4-inch boards. Figure 3 shows a pattern, with the curved ends marked off into 1-inch



squares. These squares will help you draw the curves correctly.

Each runner should be shod to make it slide easily, and to keep its edges from wearing away thru contact with snow and ice. Strips of hoop-iron will do, but half-oval iron will make a speedier coaster, and you can get the strips at a blacksmith's shop, and have them bent to fit the wooden runners, and drilled for screws.

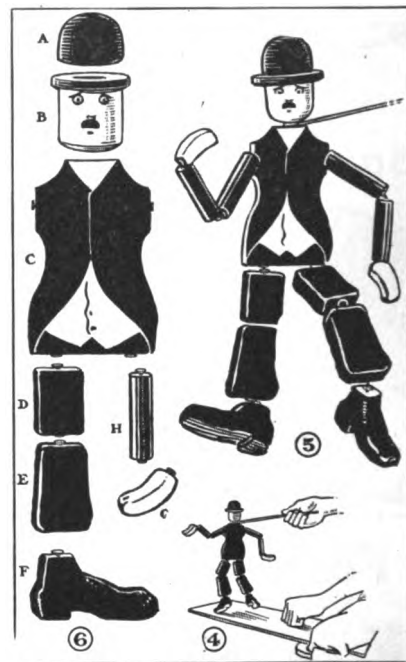
Cut crosspieces B 8 inches long. After joining the runners with them attach a pair of 2 by 2-inch iron braces (C) to each, as shown. The seat should be about 30 inches long. Cut the boards 12 inches long, and fasten them across the runners. Nail a crossbar to the bow of the runners, and the sled will be ready for painting.

The loose-jointed doll shown in Fig. 4 is made to go thru all sorts of funny movements with his arms and legs, by suspending him with a wire so his feet barely touch a shingle supported at one end on a chair, beneath your knee, and causing the shingle to vibrate by tapping it with your hand.

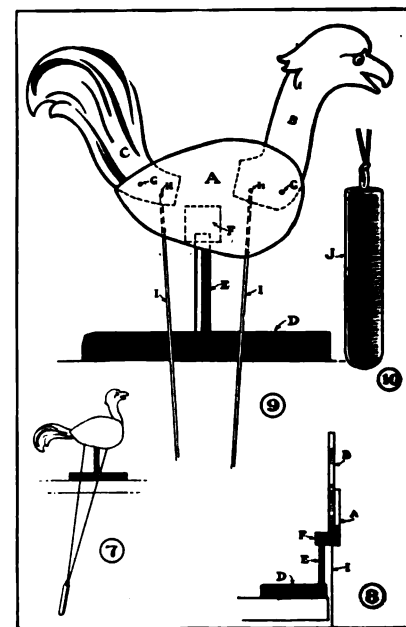
The doll is easy to make. The hat (A, Fig. 6) is the tip end of a broom handle, the head (B) is a spool with one flange whittled off, the body (C) is cut out of a piece of thin wood, the legs are two blocks (D and E), the feet (F)

and the hands (G) are small blocks, the arms (H) are round sticks.

When you have cut the pieces, paint them, then join them with linen thread, tying the thread to tacks into their ends (Fig. 5).



The "Ouija" bird (Fig. 7) looks well upon a mantel shelf or plate-rail, and this position permits its pendulum to swing freely. Note that the pendulum causes the head and tail to move. You don't have to be an artist to make the



bird. You can cut it any shape or size you want. In the larger detail (Fig. 9), A shows the body, B the head and neck, and C the tail. The neck and tail are

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pivoted to the back of the body with tacks, at the points G, and strings I are attached to tacks driven at points H, and are tied to a screw-eye in the end of a piece of broom-handle J (Fig. 10), which forms the pendulum.

The toy is mounted upon a board base D (Figs. 8 and 9), by means of a round stick E, one end of which is glued in a hole bored in base D, and the other in a block F, which block is fastened to the back of the body.

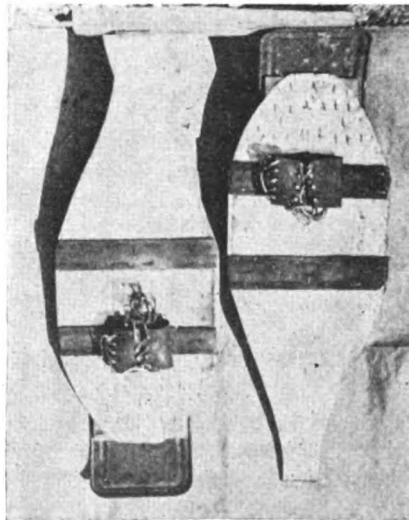
Paint the parts before assembling them. Here you will have opportunity to execute something very unusual in plumage.

(Copyright, 1922, by A. Neely Hall).



Tin Can Snow Shoes

A NEVADA mining engineer is using with great success a pair of snowshoes made from tin, cut out of oil cans. Along the center of each shoe a stiff piece of sheet metal is placed and this turns up at the front. Several rows of clinched nails hold the pieces of



Snow Shoes Made from Tin Oil Cans.

metal together. Adjustable leather straps provide means for fastening the shoes. The shoes are 3 feet 4 inches in length, with a width of 14 inches. The weight of each snowshoe is about 4½ pounds. The wearer states that on 3 foot of soft snow there is only ¼ to ½ inch depression made. In climbing or descending hills there was no trouble with slipping.

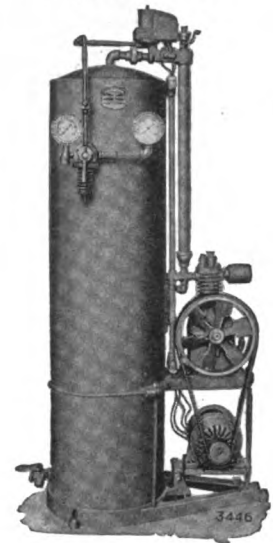


HOUSE FURNISHINGS which merely take up room aren't worthy of the name. No piece of furniture is really good which isn't useful.



THAT restless boy will just delight in fixing up a metal shoe scraper by the back door; and it will keep a lot of dirt off the kitchen floor.

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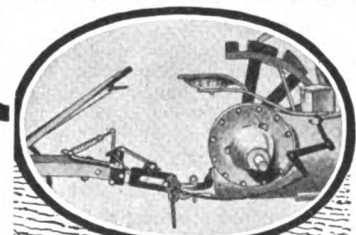
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HANDY ANDY'S DEPARTMENT

WHERE FARM MECHANICS READERS CAN PASS ALONG GOOD, TESTED IDEAS.

Holds Cow's Tail

ALL who have ever milked know how annoying it is to have the cow switching them in the face. Take a piece of wire and bend it in the shape



Device for Holding a Cow's Tail.

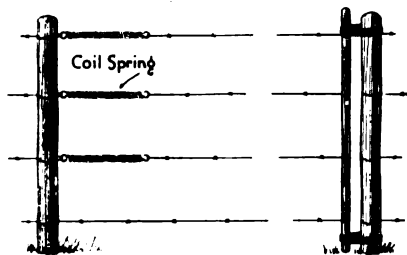
shown above and fasten it to a wooden clothes-pin by means of a piece of cord or small wire. When you go to milk all you have to do is to hook the wire hook on the cows left leg and snap the clothes-pin on her tail. She will not switch any more as long as you use this device.—William Ludwig, Paulding, O.



Making a Tight Wire Gate

I HAVE tried a good many kinds of gates, some of which cost considerable cash, and some home made of wood that was good for a while, but cumbersome; but I have settled down to the little simple four or five strand barbed wire gate as shown in the drawing.

This gate has a coil of spring at-



Springs Keep a Wire Fence Gate Tight.

tached to each of the three top wires at the back end as will be noticed. Most wire gates of this style have no springs and the wires are either so tight you can hardly open and shut them or they are so loose that you can hardly do anything with them.

I have found that this kind, with the three top wires attached to a reasonably strong coil spring, will stay plenty tight and is easily opened and shut. Just pick up some springs and try a few.

It may look rather simple, but you

\$1 for an Idea

I, Handy Andy, am famous, because I am found on nearly every farm. When some little thing that would make farm work easier pops into my head I get to work and build it. Farm Mechanics has asked me to pass my ideas along, so as to help everyone do things more easily. I want to pass your ideas along, too. Send them to me, using not more than 200 words, and a pencil sketch or photograph to illustrate it. I will send you \$1 for every idea accepted. Address your letter to me.

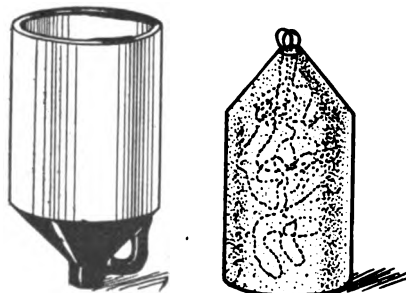
HANDY ANDY,
Care Farm Mechanics,
1827 Prairie Ave., Chicago.

will soon fix all gates that way.—R. B. RUSHING, Simpson, Ill.



Concrete Stack Weights

IT has been common practice among farmers to weight hay stacks with anything heavy, such as stones and pieces of iron. This method was not satisfactory, so we made weights of concrete for the purpose. To make the weights of a shape that is handy we knocked the bottom out of a gallon jug, put in a handful of baling wire crumpled up and filled with a mixture of concrete. In putting in the baling wire we arranged it so there would be a loop extending out the mouth of the jug. This provides a means of fastening the weight to the rope or wire that goes over



Jug Makes Mold for Concrete Weights.

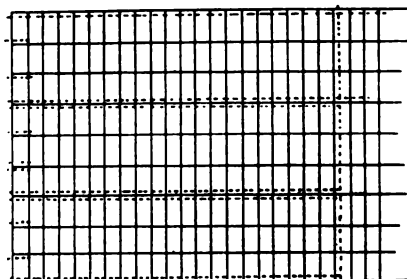
the stack. In filling the jug with concrete we put a handful of sand in the neck. Many weights can be made with the same jug.—Martin Koenig, Freehold, N. J.



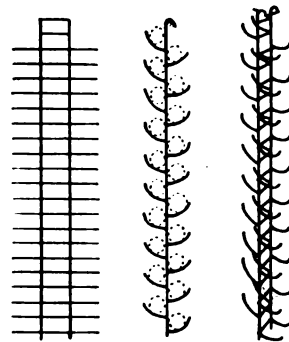
Seed Corn Hanger

A SEED corn hanger made from a section of an electric weld fence with a 2 by 4-inch mesh is not a new

Cut at dotted lines



Electric Weld Fence, 2x4 Mesh.



How to Make Seed Corn Rack of Welded Steel Fence.

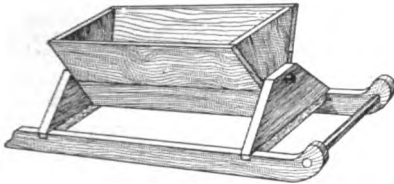
idea, but we find it the best method of keeping seed corn. The wire is cut and bent as shown in the illustration, making a rack that holds the ears. By using this hanger the ears may be taken off and examined easily and it may be hung in a warm dry place, where it is not possible for rats to get at the ears. Besides, there is no chance but that the ears are thoroly dried out.—Ralph L. Jones, Roscoe, Ia.



Dump Sled

HERE is a home-made sled that will be found useful around the farm in the winter time for hauling feed to

the chickens or hogs, or for any other job. The illustration shows the sled finished. The runners are made of 2x4s, about 4 feet long, the ends of which are cut to curve at the front. The runners are held in place by crosspieces of 2x2s. On each of these crosspieces set a piece cut as shown in the illustration. These pieces make a support for the rod that runs thru the bucket. Near the edge of one of the pieces should be holes for



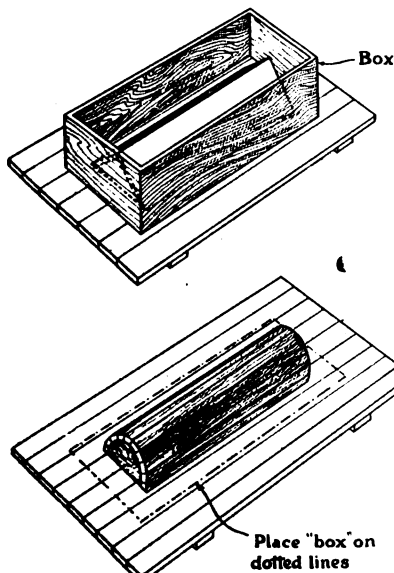
Sled with Dump Body.

rods to keep the bucket upright. By removing either one of these the bucket may be tipped. The bucket is made of 1-inch boards. It is 16 inches high and 30 inches long, with the side boards meeting at the bottom.—A. L. PETER, Randolph, Minn.



Concrete Hog Trough

A CONCRETE hog trough may be made by constructing a frame 4 to 6 feet long, 22 inches wide and 10 inches deep, inside measurements. Make a V-shaped trough 6 inches shorter than the inside length of the frame, of two boards, one 13 inches wide and the other 12 inches wide. Fit triangular piece of 2-inch plank in the end of the trough. Lay the trough upside down in the frame and run some rods, cable or heavy wire lengthwise when the frame is partially filled with concrete. The frame should be placed on a platform of smooth, matched boards, so as to



Forms for Making Concrete Hog Trough.

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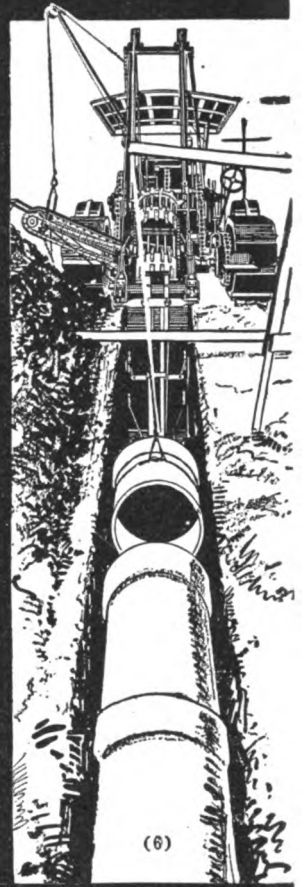
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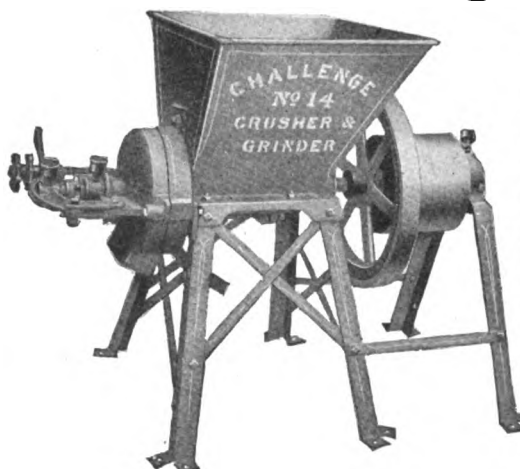
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—JOSEPH RIVARD, Tilbury, Ont.



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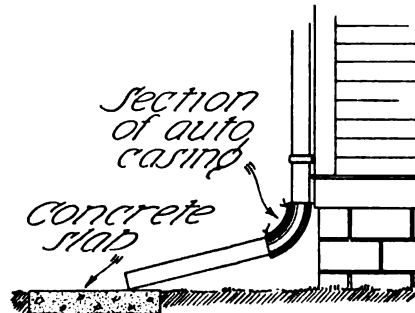
get a smooth surface at the top of the finished trough. When the frame is filled the top should be troweled off smoothly and evenly, so the finished trough will be level. Should a round instead of V-shaped trough be wanted, the form may be made by nailing narrow strips to semi-circular end pieces.—Marion Dill, Mt. Moriah, Mo.



A Rain Spout Repair

MANY times a house built with rain spout equipment has no facility for extending the drain over a walk which may later be laid about the building.

The drawing illustrates a flexible joint for such a purpose. It consists of a por-



Easy Method of Carrying Away
Water from Spout.

tion of an old auto casing, which is fitted over the lower end of the vertical pipe and connects to a short length which spans the walk. Holes are punched at the ends just under the bead and a wire run thru and the ends drawn tight and twisted together to hold it in place.

If rain spouts do not lead to a cistern there is always the matter of preventing the falling water from gouging out sod. One of the most effective means is a small concrete slab which is shown. This can be cast without forms. Cut out a section of sod, making the sides perpendicular, and scoop out the bottom to a depth of four inches. The concrete is then poured in and the top smoothed off with a board.

This slab will check the onrush of water and spread it out, fan-wise, so that when it does strike the grass, no harm is done.—D. R. V. H.



Wooden Tongs Get Pipe From Well

WHILE replacing the leather washer on the upper cylinder of a pump, a piece of round steel rod about eight feet long and half an inch in diameter fell to the bottom of the well. It landed on end, of course, and embedded itself in the sand at the bottom of the well, then fell over sideways until the upper end was against the wall.

The well was over fifty feet deep and



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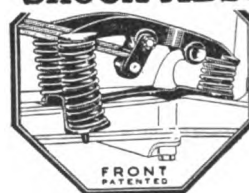
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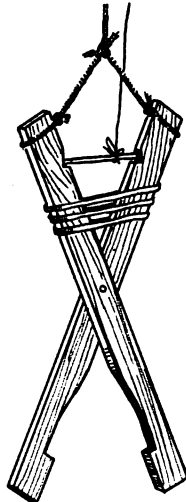
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WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

had about four feet of water in it, so the upper end of the rod was visible from the top of the well when a lantern was lowered on a clothesline, but it looked a long way off.

Without much real hope of success, a large pair of wooden tongs were hastily constructed by taking two pieces of inch boards, about four feet long and four or five inches wide, and hinging them near the middle by driving a heavy nail thru them both. The inner edges of the lower ends were roughly notched with a hatchet so as to enable them to grab and hold



Tongs Used to Recover Pump Rod.

A piece of light rope was fastened to the upper end of each arm by means of a nail driven into each of them. A long piece of clothesline was tied to the middle of this piece of rope, and long piece of twine tied to one end of the stick or trip which held the tongs open.

The outfit was soon ready for trial. It was lowered carefully into the well, so as to avoid jerking the trip out, for it seemed advisable to have the trip set so it could be pulled out easily and without moving the tongs when they were once got in place to grab the rod.

With a little manipulation the tongs were worked into a position where the jaws appeared to be across the rod; a jerk on the twine, and the jaws closed on air with a vicious snap—missed. But the second attempt was more successful, and the jaws closed just where they were intended to—on the rod.

Then came several minutes of rather nerve-racking maneuvering. The rod was stuck rather tight in the sand and mud at the bottom, and the coupling on its lower end made it hard to work it loose with the slight amount of pull which it was safe to exert on the rope. But after a continued swinging of the upper end and a gentle, coaxing pull, it came loose and was drawn to the top.

—ARNOLD P. YERKES.

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500 BUSINESS LETTER HEADS and 250 Envelopes \$4.25. **BURNETT PRINT SHOP**, Box 145, Ashland, Ohio.

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BUY SILVER FOXES, \$5 monthly. **SILVERBAR ASSOCIATION**, 143K Dracut, Mass.

HUNTING FERRETS

HANDLED, HUNTING FERRETS. Either color. **CLARENCE SNIDER**, Somerset, Ohio.

WHITEWASH has a natural affinity for hen coops, dairy stables, board fences, and they ought to be allowed to get together.



SOYBEANS are coming into their own, they have a short growing season, they help store the soil with nitrogen; they yield heavily in forage and seed.

To Dye With Success

"I can't be done, the garments that I tried to dye are streaked and muddy or quite different in color from what I intended" is what many a woman will answer when you ask her about her dyeing experience. But if you ask her how she went to work, you will soon discover that she followed her own sweet will all the way thru.

Dyeing, like everything else in this world, is easy when one knows how, and to know how means simply to follow a few very definite directions. There are many good dyes, and many women are using them with excellent results.

Directions on the dye package are explicit, but because many overlook them, it may be well to consider each one and give the "whys," as explained by Mrs. Catharine Griebel, extension specialist in clothing of the New Jersey State Agricultural College. Cotton goods, she says, require cotton dye; woolen goods require wool dye; mixed goods require cotton dye, because wool will take cotton dye, and cotton will not take wool dye.

As each package of color will dye a definite amount of goods, the goods must be weighed and the correct proportion of dye used, if one expects good results. Unless the material is clean before it enters the dye-bath, the color becomes muddy. Spots must be removed also or they will show when the goods are dyed, even if the color is darker. Unless the dye pot is clean the dye-bath becomes muddy, and it must be large enough to hold the amount of liquid necessary for each lot of stuff.

The dye must be dissolved in about one quart of hot water and strained thru a clean cloth so that no impurities remain to stain the material. All material should be moist, not wet, before it is put into the dye-bath and it must be stirred constantly with smooth sticks; otherwise the dye does not get to all parts of cloth alike and it becomes streaked. Good sticks may be made of old broom handles.

When salt is called for, do not put it in until the material has been boiled the length of time given in the directions. Then take pains to boil for the correct amount of time after the salt is added. Finally rinse and rinse until the water is clear, dry and press the garment and you're bound to be successful, because you went about it in the right way.

Remember that white goods will take any color, but that dark goods will take only their own hue, a darker tone or black. Above all things, be sure that the garment you are to dye is worth the time and money you are to put into the dyeing process.

**Statement of the Ownership,
Management, Circulation,
Etc., Required by the
Act of Congress of
August 24, 1912**

Of FARM MECHANICS, published monthly
at Chicago, Ill., for October 1, 1922.

State of Illinois } ss.
County of Cook }

Before me, a notary in and for the
state and county aforesaid, personally
appeared B. L. Johnson, who, having been
duly sworn according to law, deposes and
says that he is the editor of FARM ME-
CHANICS and that the following is, to the
best of his knowledge and belief, a true
statement of the ownership, management
(and if a daily paper, the circulation),
etc., of the aforesaid publication for the
date shown in the above caption, required
by the Act of August 24, 1912, embodied
in section 443, Postal Laws and Regula-
tions, printed on the reverse of this form,
to wit:

1. That the names and addresses of the
publisher, editor, managing editor, and
business managers are:

Publisher—Wm. A. Radford, Chicago,
Ill.

Editor—Bernard L. Johnson, Chicago,
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Managing Editor—J. D. Eddy, Chicago,
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Business Manager—Paul N. Rothe,
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2. That the owners are (give names
and addresses of individual owners, or,
if a corporation, give its name and the
names and addresses of stockholders
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of the total amount of stock):

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Bernard L. Johnson, Chicago, Ill.

Roland D. Radford, Chicago, Ill.

Wm. A. Radford, Jr., Chicago, Ill.

3. That the known bondholders, mort-
gagees, and other security holders own-
ing or holding 1 per cent or more of
total amount of bonds, mortgages, or
other securities (if there are none, so
state): There are none.

4. That the two paragraphs next above,
giving the names of the owners, stock-
holders, and security holders, if any,
contain not only the list of stockholders
and security holders as they appear upon
the books of the company, but also, in
cases where the stockholders or security
holder appears upon the books of the
company as trustee or in any other fidu-
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corporation for whom such trustee is
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paragraphs contain statements embracing
affiant's full knowledge and belief as to
the circumstances and conditions under
which stockholders and security holders
who do not appear upon the books of the

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NOTICE TO ADVERTISERS

Forms for the December number of Farm Mechanics will close promptly November 15. New Copy, changes and orders for omissions of advertisements must reach our business office, 1827 Prairie Ave., Chicago, not later than the above date. If new copy is not received by the 15th of the month preceding date of publication the publishers reserve the right to repeat last advertisement on all unexpired contracts.

FARM MECHANICS.

company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stocks, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is (this information is required from daily publications only).

BERNARD L. JOHNSON.

Sworn to and subscribed before me
this 21st day of September, 1922.

ANDREW JOHN NAUMANN.

(My commission expires Oct. 23, 1925.)

A FEW boards from a packing case
will make a shelf in the cellar to
store the extra cans of fruit which this
year's big crop made you want to put up.

PUSHING the wood box to the door
to be filled keeps dirt out of the
kitchen. Legs and casters on it turn the
trick and do away with stooping.



BBREAD FLOUR sifted several times
will do for pastry and cakes. Two
tablespoons of cornstarch in each cup of
bread flour makes it more like pastry
flour.



TO make an unusually tasty apple
whip, whip the whites of two eggs
to a stiff froth and add one cup of
sugar and a cup of grated apple.



WHEN anything boils over on the
stove, cover it at once with salt;
the odor will be killed and the spilled
food can be cleaned up easily.



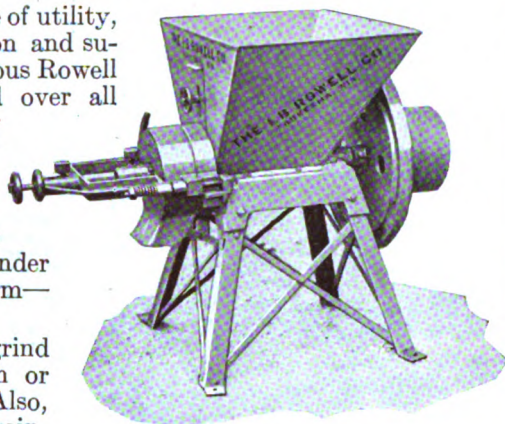
FLOWERS around the yard add
greatly; but put them around, not in
the middle. Open spaces make the lawn
look larger.

The Grinder of Today —and the Future

Because of its wide range of utility, its mechanical perfection and supreme quality, the Famous Rowell Grinder has dominated over all others for years. Today its leadership is unquestioned.

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Waukesha, Wisconsin

FARM FUN



Wrong Place

A tramp knocked at the kitchen door. "Please, ma'am, I have lost a leg—" "Well, it ain't here," said the irate mistress.



A Menace to Navigation

"Those revenooers are certainly strict on incoming vessels."

"What's happened now?"

"Here's a story of a ship captain being arrested as he was making port."



Speaking of Dry Spells

"Yes, we do have some pretty long dry spells here," said the old desert rat to the inquiring tourist. "Fact of it is that after some of them we have to teach the fish to swim again, but what makes it sad is that so many of 'em drown learnin'."



Seasonable Job

Settlement Worker—What makes your husband look so worried, Mrs. Mixer?

Mrs. Mixer—He's dreading the time, ma'am, when he'll have to go back to work.

Settlement Worker—Whom does he work for and what does he do, Mrs. Mixer?

Mrs. Mixer—He works for the Salvation Army, ma'am. He Santa Clauses. —*Mid-West Review*.



Taught at Home

Teacher—James, who was the greatest man in the world?

James—Mamma's first husband.



No?

"Pop, I got in trouble at school today and it's all your fault."

"How's that, my son?"

"Well, you remember when I asked you how much a million dollars was?"

"Yes, I remember."

"Well, teacher asked me today, and 'helluva lot' isn't the right answer."



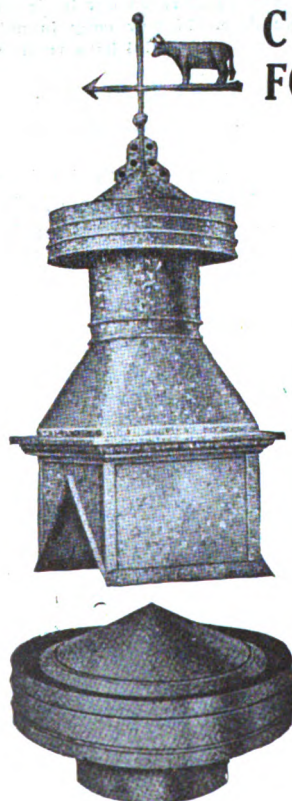
All Explained

Farmer—See here, young feller, what are you doing up that tree?

Boy—One of your apples fell down and I'm trying to put it back.—*The Antidote*.

WILLIS

COMFORTS FOR STOCK



INCREASE the vitality, strength and weight of your stock by allowing them to breathe pure air in the stables. Without proper ventilation, foul gases accumulate and undermine their health, causing sickness and death. This important detail in barn construction is as essential as proper food and water for the well being of your stock. To be sure of a correct ventilating and lighting system install WILLIS products and rest assured that your problem is solved. Write us today for information on our complete line of ventilators, hothouse windows, batten strips, etc.

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FARM

DECEMBER
1922

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A Monthly Magazine Featuring Farm Improvements
Machinery, Equipment, Farm Buildings



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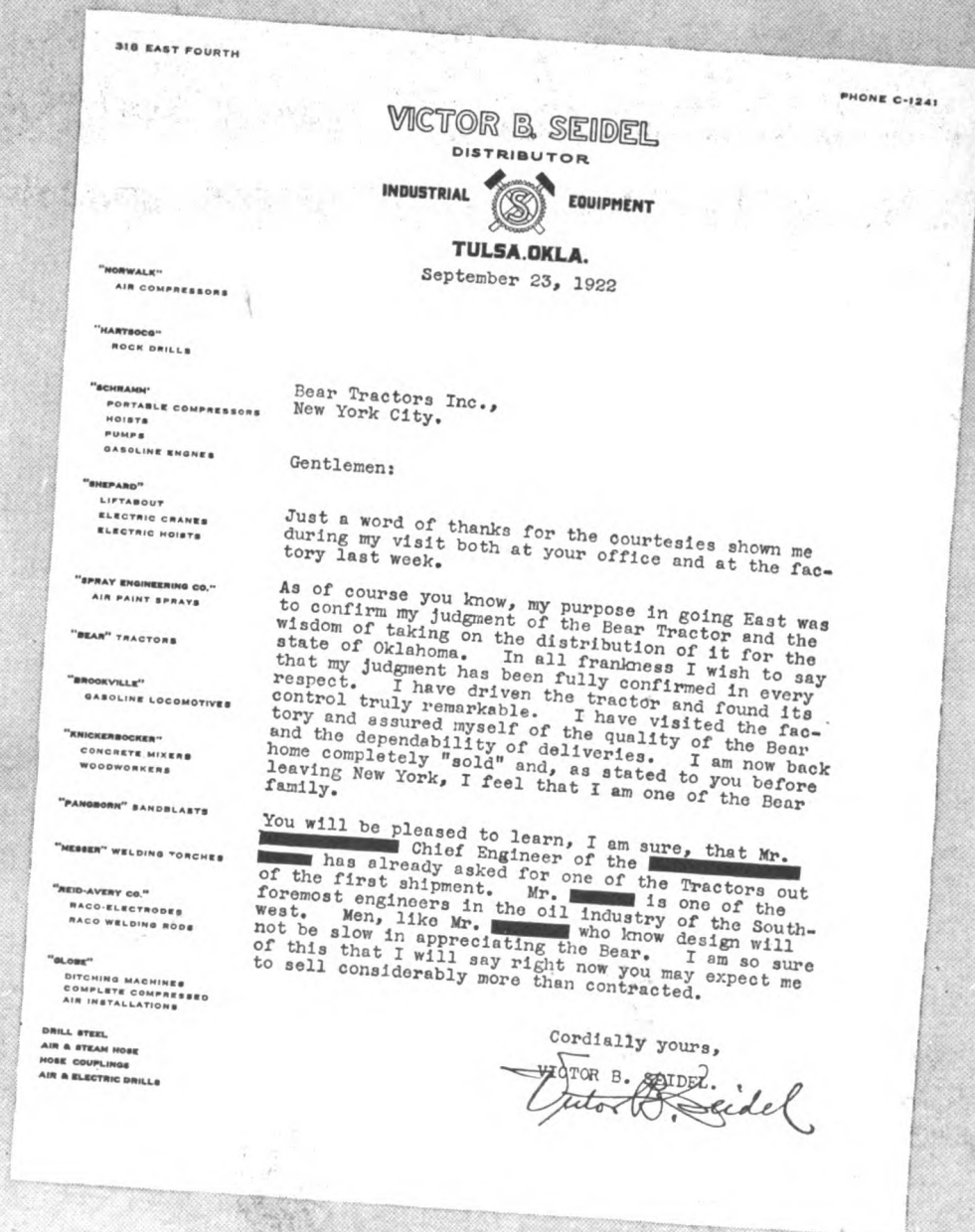
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The Tractor that Delivers its Power to the Drawbar

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

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Why not bring to your family the priceless gift of electricity? *This Christmas . . .*

It means so much to everyone. It means cheerful light for the reading hours of long, wintry nights. It means study-comfort for the children with whose ambitions your hopes are linked.

It means smiling release for your wife from the wearing toil of washing and ironing the old, old way. It means the economical, efficient performance of your daily tasks.

It means heartening little comforts

—the chuckle of the electric percolator at your elbow, to take the grim edge from early-morning breakfasts.

Why not? With the Kohler Automatic you can enjoy electricity at its best—110 volt current freed from storage battery limitations, automatically available anywhere and any time.

Act today and the Kohler Automatic shall light your Christmas tree! Write for (1) name of nearest Kohler dealer; (2) descriptive booklet No. 84; (3) convenient-payment plan.

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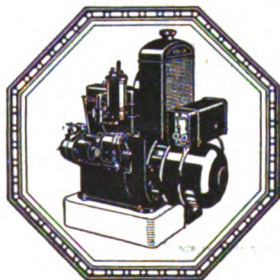
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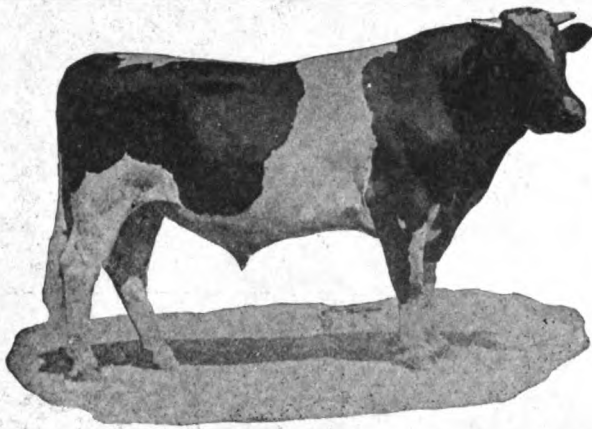
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110 VOLT



D. C.



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Only four years old and the sire of 9 daughters, all of which made better than 20 lbs. of butter in 7 days as two-year olds, including PABST CREATOR VIRGINIA ROSE, 26.70 lbs. butter from 487.0 lbs. milk at 2 years, 2 months, 9 days.

The following sons of Creator are the oldest we have left:

Ear Tag 560—born 1/20/1922; dam a handsome 3½ year old daughter of King Pontiac Champion now on test making 27,000 lbs. milk and over 1000 lbs. butter. Calf evenly marked. Straight.
Price.....\$1,000

Ear Tag 561—born 2/2/1922; dam a junior 4-year old with 24 lbs. butter in seven days from 621 lbs. milk. Now on test with 17,440 lbs. milk and 671 lbs. butter in 8 months. Calf a trifle more black than white. Absolutely straight.
Price.....\$300.00

Ear Tag 565—born 2/27/1922; dam a 25-lb. 4-year old daughter of King Pontiac Champion. She is a full sister to Pabst Goldenrod, 37 lbs. butter 7 days and 1139 lbs. butter 365 days. She is a good prospect for large yearly record also. Calf is more white than black. Straight. Price.....\$300.00

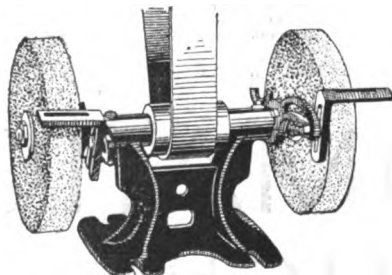
Ear Tag 566—born 3/2/1922; dam a 25-lb. junior 4-year old daughter of Matador Segis Walker, now on year test making 700 lbs. butter from about 17,000 lbs. milk. Calf mostly black. Excellent individual. Price.....\$300.00

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MILWAUKEE, WISCONSIN**

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FARM MECHANICS

MONTHLY FARM MAGAZINE ON TRACTORS
FARM MACHINERY, BUILDING IMPROVEMENTS AND
MODERN AGRICULTURE

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FARM MECHANICS COMPANY

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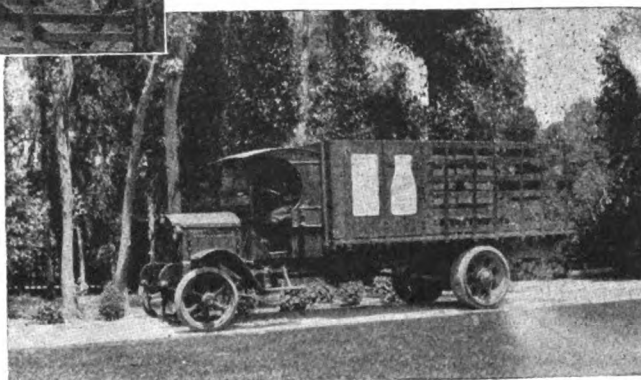
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General Motors Trucks



GMC truck used by the Arden Dairy Company of El Monte, Calif. to haul milk to Los Angeles.



GMC Helps Haul Milk From Herd of 350 Cows

Throughout the Los Angeles territory "Arden Certified Milk" is recognized as the last word in purity and food value. That this reputation is justified is shown in the fact that a bottle of Arden milk was sent across the continent to a New England fair, and there took the prize over the finest milk there.

The Arden Dairy is a large institution, milking about 350 Holstein cows and handling the product by the most improved mechanical methods. Yet this tremendous institution, representing the maximum of efficiency in all its branches, maintains this herd of milk cattle without pasturage facilities of any sort.

The location of the dairy, at El Monte, is some twenty miles distant from Los Angeles, from which point the bottled certified milk is distributed. Two trucks, one a GMC two-ton, are the transportation media for the institution.

By the use of this motor equipment the dairy is enabled to make schedule deliveries of its milk to the city twice each day and to bring from the markets all the supplies necessary for the feeding of the cattle and the operation of the place.

Just what part the trucks, and particularly the GMC play in this operation, is told by Mr. E. B. Carter, president of the company:

GMC Costs Less to Run

"At present we are operating only one GMC truck. However, I do not think it will be long before we are operating the second, because our other truck is getting worn out and the drivers will not be satisfied until it is replaced with a GMC.

"Although the other truck had given us good service, we decided to purchase a GMC for our second, when we learned that we could secure fully as great efficiency at a considerable saving over the other make. Since the time of our purchase, three years ago, the two trucks have been running side by side in the same class of work, but we are frank to say that we have heaped the loads a little higher and used the GMC a little more than the

other, and yet the showing in operation costs are all in its favor.

"Twice each day we load the trucks to more than capacity and send them into Los Angeles, which is the center of distribution for our milk. On the return trip they bring back a load of empty bottles and cases, and supplies for the ranch. You see we do all feeding on a mixed ration basis and there is no pasturage.

Carry Loads Both Ways

"The job of supplying such an institution as this with feed and other things, from a market twenty miles distant, is quite a job in itself, but the possibility of operating our trucks with a full load in both directions is one of the things that makes for economy and helps our earnings.

"Our GMC truck has given us excellent service ever since, and, as I say, we shall probably be purchasing another one soon, which is about the best recommendation we could give as to our satisfaction."

GMC chassis list at the factory as follows: one ton, \$1295; two ton, \$2375; and three and one half ton, \$3600; five ton, \$3950; tax to be added.

GENERAL MOTORS TRUCK COMPANY

Division of General Motors Corporation

PONTIAC, MICHIGAN

Dealers and Service in Most Communities



WINTER SPORTS. Snow and ice provide the means for healthful exercise for the younger generation. Tobogganing, skating, skiing and the other activities possible in the north during the cold months take the boys and girls out of doors and put the bloom of health into their cheeks.

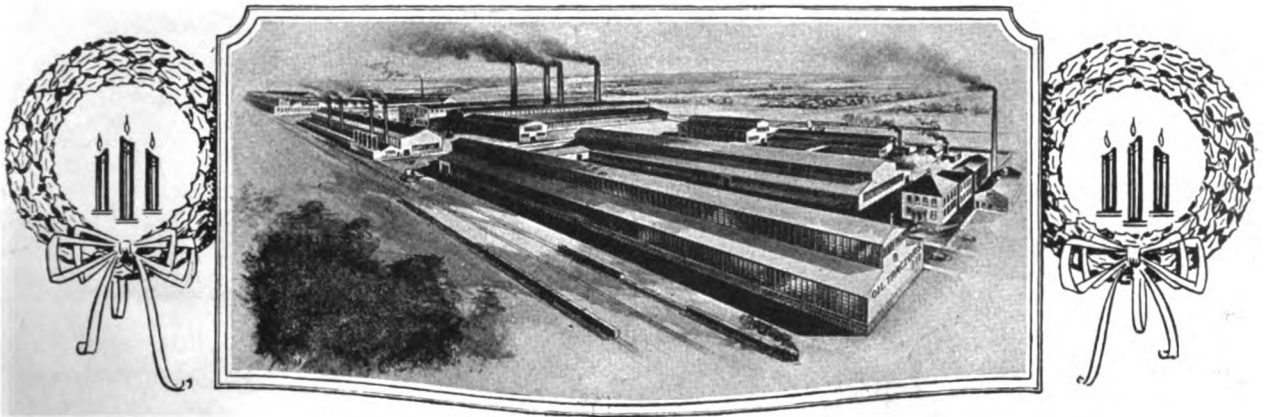
GERMAN BOYS GATHERING ACORNS FOR "COFFEE."

Coffee costs as much as 600 marks a pound in Germany now, and to most families is out of the question. Acorns are used as a substitute. The picture shows boys gathering the acorns, which are dried and ground.



MILE A MINUTE ON THE ICE. This unique motor sled has remarkable speed. It was constructed by the owner, David Jones, of Peabody, Mass., of a twin cylinder motorcycle engine and an aeroplane propeller. The sled develops a speed of 60 miles an hour and easily outdistances any of the ice yachts.

1900 Christmas 1922



22 Years of Specialization

Twenty-two years ago Christmas Week the Hart-Parr Company opened a small shop at Charles City, Iowa, and dedicated it to the development of the then unknown Tractor Industry. With vision and courage, the little company turned its back on its years of successful manufacture of stationary gas engines, and staked its future on the pioneering of a new and untried industry.

The tractor industry was founded on the success of old Hart-Parr Number One—the first successful tractor ever built, which was brought out that first year, and gave continuous service to its farmer owner for more than 17 years.

From Christmas 1900 to Christmas 1922, the Hart-Parr Company has consistently specialized in the manufacture of tractors only. We have no side lines. We are Kerosene Tractor Specialists. Back of our tractors today are twenty-two years of specialization—twenty-two years of knowing how—which is a guarantee of quality and performance to our dealer and farmer friends.

During this Yuletide Season—our 22nd Anniversary, we wish to pledge anew to the Tractor and Implement

Trade our faith and confidence in the future of the Tractor Industry.

Its foundation is agriculture. Its mission is to lighten the labor of those who produce from Mother Earth; to help them decrease the cost of producing their crops and to give them the assurance that their land will be prepared on time, their crops seeded, cultivated, matured and harvested in season, and to furnish them with belt power to thresh and grind their grain. Because power farming is fundamentally right it will persist.

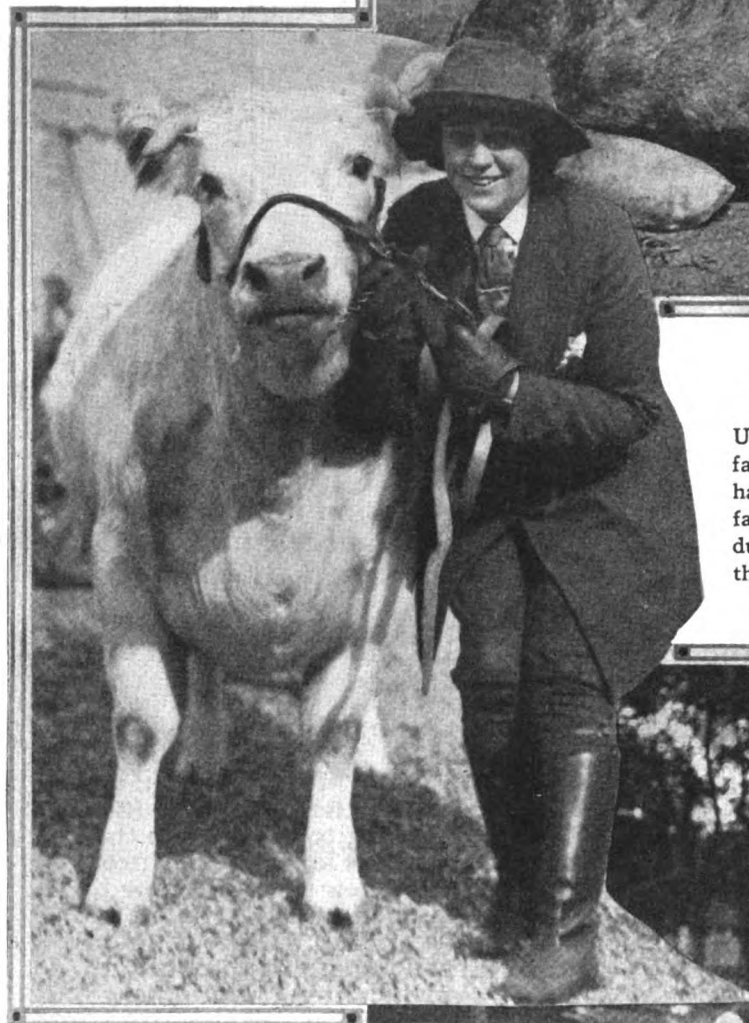
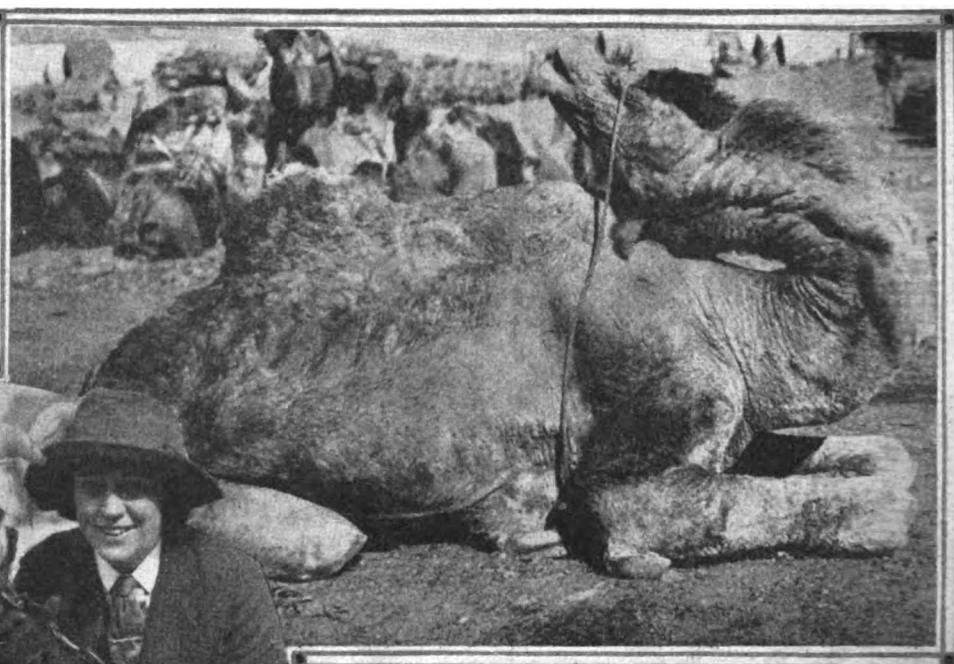
In this spirit of service we extend to our many dealer friends, and to our thousands of satisfied farmer owners, the kindest of Christmas Greetings, together with the wish that the New Year will be happy and prosperous.

THE HART-PARR COMPANY, 642 Lawler St., Charles City, Iowa
Founders of the Tractor Industry



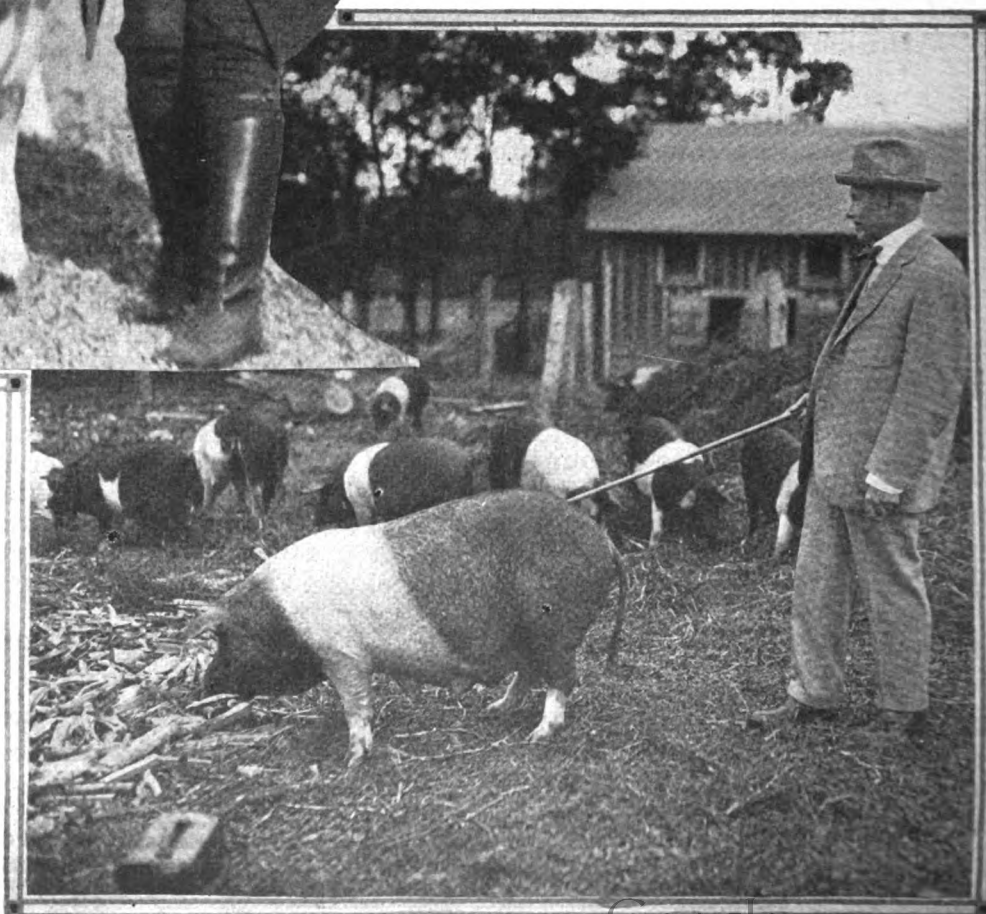
A CONTORTIONIST.

Here we have an odd sight, for the camel was photographed while in the act of scratching his neck with the back of his head. This is some stunt. If you don't believe it, try it.



JUDGE E. H. GARY, the master mind of the United States Steel Corporation, is an enthusiastic farmer. At his estate near Jericho, Long Island, he has a fine herd of Hampshire hogs, as well as other farm livestock. Farming in all its branches is conducted on Judge Gary's place. The photograph shows the judge inspecting his hogs.

PRIZE WINNERS. At a recent livestock show in San Francisco, "Caledonia Mischief" was made the grand champion Shorthorn heifer. And like all champions she had her picture taken with the young woman enthusiast shown. The latter is Miss Bertha Wilcox, who loves animals.



COMPLETE Tresco \$50 DOWN Long Distance \$20.00 PER MONTH Radio Receiving Set

Made Under Armstrong License

HERE, at last, is your opportunity to secure on easy terms, the best Radio Receiving Outfit ever built—the TRESKO Regenerative Set, built under Armstrong license.

With it you can bring the world to your door by the turn of some knobs, any hour, day or night. Crop, market and weather reports; stock-market quotations and other business information by day, and concerts, lectures, solos by famous performers by night. And the children are not forgotten, for many stations broadcast wonderful bed-time stories at 7:30 every evening. And on Sundays sermons by noted pulpit orators.

The price is \$150.00, express prepaid to any part of the United States. You pay \$50.00 down and \$20.00 per month for five months. Enjoy it while you are paying for it. And, like as not, the market information it gives you will make it pay for itself many times over.



No investment you can make will do more to keep the young people at home and happy. With the Loud-speaker horn attachment listed below, they can give little neighborhood dancing parties, to music radioed from some famous orchestra in a distant city. And between dances, entertain their guests with the selections of great opera singers or other high-priced city talent—without cost.

Give your family a Christmas present of this wonderful Radio Set. Fill out the coupon; send it with \$50.00 and outfit will be shipped at once. Phone any banker or business man owning the Dun or Bradstreet service

as to our responsibility. Set is absolutely guaranteed.

Here in Chicago, this same "Tresco" set brings in Schenectady and New York City, Pittsburgh, Detroit, Atlanta, Kansas City, Denver and all stations in between. So you can judge by these distances the stations that you will be able to reach.

THE SET INCLUDES

Set is **complete**—everything you need; to the last screw or piece of wire. You don't have to shop around for parts. It includes:

Tresco Tuner and Detector unit shown at the left of the picture complete with Radiotron tube.

Tresco Two-Step Amplifier unit, shown at the right of the picture, complete with two Radiotron tubes.

Pyramid "A" Battery, 6 volts, 60 amperes.

Burgess "B" Batteries—22½ and 45 volt.

Dictagraph Head Phone.

Complete antenna and wiring equipment with 100 ft. of wire.

Brach Lightning Arrester, insulators and connections.

OPTIONAL EXTRAS

A third unit, shown in the center of the picture for holding the "A" Battery, \$12.50.

Dictograph Loudspeaker and Horn illustrated above, enabling you to entertain dozens or hundreds of people all at once. Sold with the set for one extra monthly payment, \$20.00.

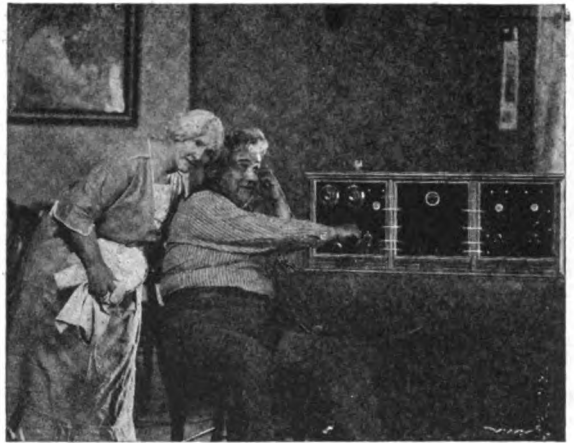
Extra head phones, each \$8.00.

Circulars on Request

Mitchell Blair Co.

1429 South Michigan Ave.

CHICAGO



"CORN IS UP A CENT!"

Chaslyn Ball Battery Tester

For automobile and radio acid storage batteries. In the glass barrel are three balls of different weights and colors. Condition of charge or acid is shown by the manner in which the balls sink or swim in the acid, which you draw out of the battery cell. These rhymes tell the story:

"Float all three—charged fully.
Sinks the white—charge still right.

Sinks the green—charge is lean.
Sinks the red—charge is dead."

More accurate than graduated scale hydrometer and ten times as easy to read. And you can read it without lifting it out of the battery cell. No more acid-burnt carpets, rugs or clothing.

Set also includes:

Depth gauge, to show depth of acid over the plate.

Air-controlled rubber stopper for distilled water bottle, making it easy to "water" the battery.

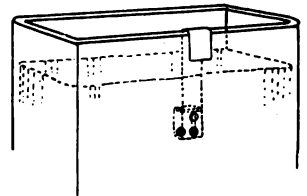
Price of complete set, postpaid—\$1.00.



Ball Tester for Farm Lighting Batteries

Instead of fussing with a complicated hydrometer hang a Chaslyn "See-Thru" Hydrometer in each cell and **leave** it there. You can then see the condition of the acid in any cell at a glance by looking through the glass and noting how the balls sink or swim.

Price, including balls, postpaid 35c each or \$3.50 per dozen.



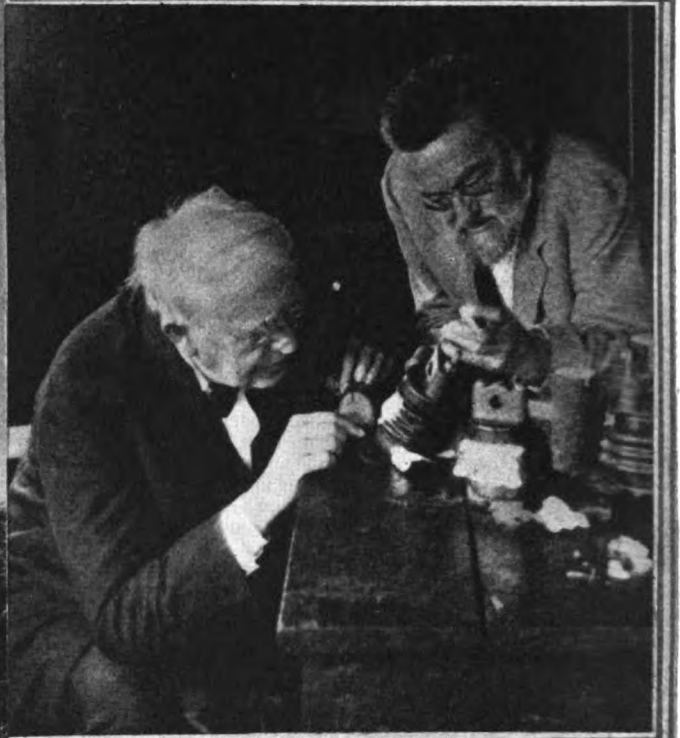
MITCHELL BLAIR COMPANY,
1429 S. Michigan Ave.,
Chicago, Ill.

Please ship me by express prepaid, the complete Tresco Receiving Set, described in the December, 1922, issue of Farm Mechanics. I enclose..... for \$50.00 and agree to pay \$20.00 per month for..... months, until the full purchase price of \$..... is paid, set to remain your property until fully paid for.

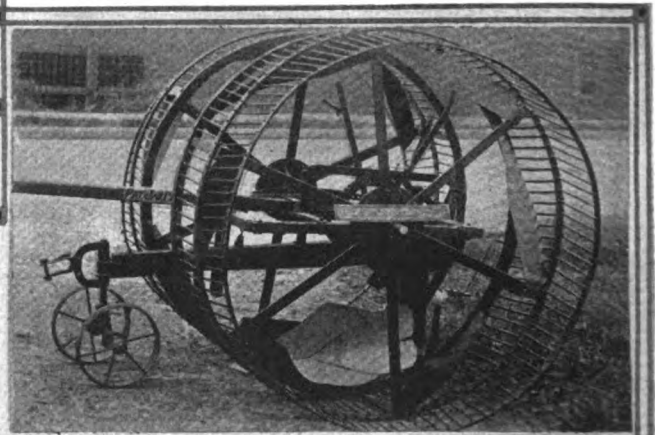
References..... Address..... Name.....
1.....
2.....
3..... Address.....

Prices: **Without Loudspeaker Horn**—\$150.00, payable \$50.00 down, with five monthly payments of \$20.00.
With Loudspeaker Horn—\$170.00, payable \$50.00 down, with six monthly payments of \$20.00.

WIZARD MEETS WIZARD. Here are Thomas A. Edison and Dr. Charles P. Steinmetz, two foremost authorities of the world on things electric. Dr. Steinmetz is showing Mr. Edison the results of his artificially created lightning.



A UNIQUE POTATO DIGGER designed by a New York State farmer. The plow in the center turns the potatoes and soil into the wheels which sift out the tubers.



EMULATING THE BIRD. German gliders have astonished the world by their ability to soar like a bird, the gliders having no motive power.



CUTTING A WIDE SWATH. One of the latest of efficient farm machinery is a power driven binder that cuts a 10-foot swath. The binder is operated by power taken from the drive shaft of the tractor to which it is hitched.



A Brighter Christmas on the Farm With DELCO-LIGHT

Bring greater happiness into the lives of everybody on the farm by making Delco-Light your family Christmas present.

There isn't anything that would give greater pleasure and comfort. There isn't anything that would so lighten the daily burdens and make every day on the farm happier. And just think how the family will enjoy the cozy rooms flooded with bright, clear, and steady Delco-Light.

Remember, too, Delco-Light will

bring a happiness that extends far beyond Christmas day, for Delco-Light will be constantly on hand to provide brilliant, safe light, running water wherever you need it, power to run the separator and tumble the churn, and help in so many other ways.

And the new big price reduction and the time payment plan make it easy for you to get Delco-Light *now*—to place your order *today* to insure delivery in time for Christmas.



DELCO-LIGHT COMPANY, DAYTON, OHIO
Subsidiary of General Motors Corporation

Also manufacturers of Delco-Light Water Systems, Delco-Light Washing Machine, and Frigidaire, the Electric Refrigerator. Made for 32 and 110 volt Direct or Alternating Current Service

Dependable
DELCO-LIGHT

More than 165,000 Satisfied Users -

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

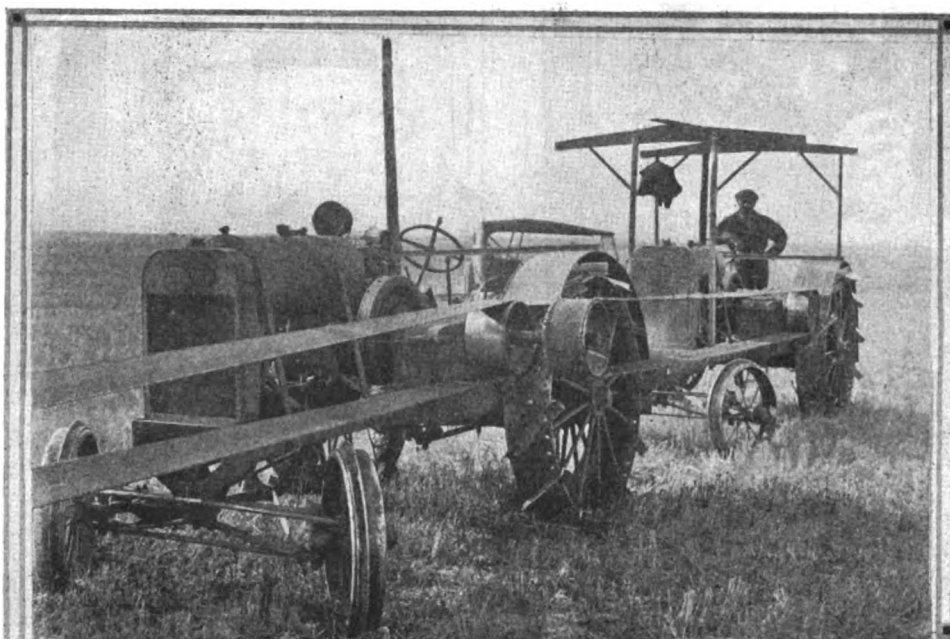
Delco-Light Company, Dayton, O.
Please send me without obligation, the Delco-Light catalog, new prices and details of easy payment plan. R M 13

Name.....

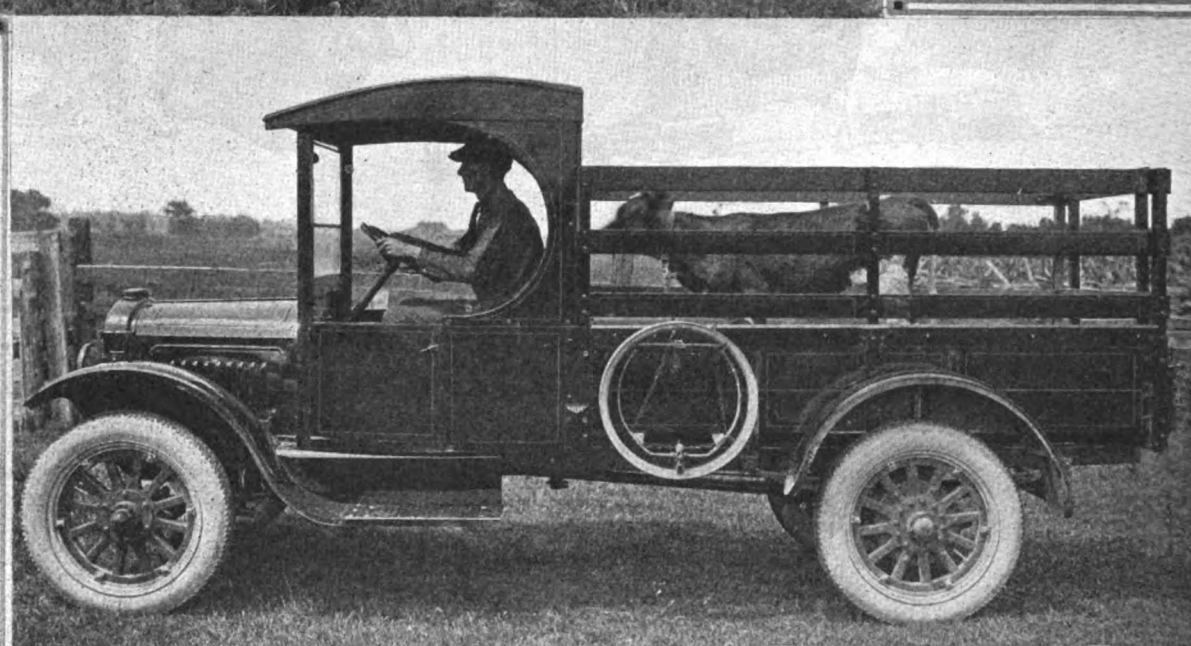
Street (or R. F. D.).....

Town.....

County..... State.....



DOUBLE POWER FOR THRESHER. An Ingenious Nebraska farmer needed 60 horsepower to operate a large threshing outfit. So he belted two tractors together in the manner shown in the photograph and secured what he required. An extension shaft with a second belt pulley was put on one of the tractors and the second one belted to it.



EFFICIENT FARM EQUIPMENT. Above is a light farm truck that many farmers are finding economical for their hauling. At the right is an overhead trolley leading from the stable to the manure spreader. This method is the means of saving all the fertility produced on the farm.





The Work of the Month

DECEMBER brings the year of 1922 to a close. Compared with 1921 it has not been a bad year. Total crop production for the year was slightly more than 1 per cent less than the average for the preceding ten years. Labor costs in producing the crop were less, while the prices received averaged better. It is an axiom in business of all kinds that every cent saved in cost of production is added to the profits. That's the job for December and January—making plans that will decrease the cost of producing the same crop, and increasing it if possible. ✚

IMPLEMENTS and machines that are safely housed, cleaned of dirt and their metal parts greased will be in better condition next spring. It is a good plan when putting them away to make a note of their condition. Tag those that need repairs, indicating what new part is needed or the repair that is required. Then it is a simple matter to make out the list of parts needed and get the order in with the dealer or manufacturer before the delinquents flood them with their orders. ✚

TRACTOR owners in the northern sections who do not want to find leaking radiators and cracked water jackets will do well to be sure the cooling system is drained when the tractor is run into the implement house at night. When the stop cocks are opened be sure that the water runs out. Oftentimes a stopped pipe prevents draining and causes trouble. ✚

EVERY year brings an advance in the value of the short courses in tractor operation held at the State Agricultural Colleges. Early reports this year indicate that these courses will have more "students" than they can accommodate. They really are repair shops where the attendants are required to work as machinists six or eight hours a day. Working under the direction of competent instructors and with several kinds of tractors to practice upon, tractor owners and operators get real training that will be worth dollars to them next season. ✚

THE approach of Christmas leads to thoughts of gift making. Some people, especially those among the grownups look upon this custom as rather a foolish one, holding that in order to keep up with friends many use money that would be better spent for other

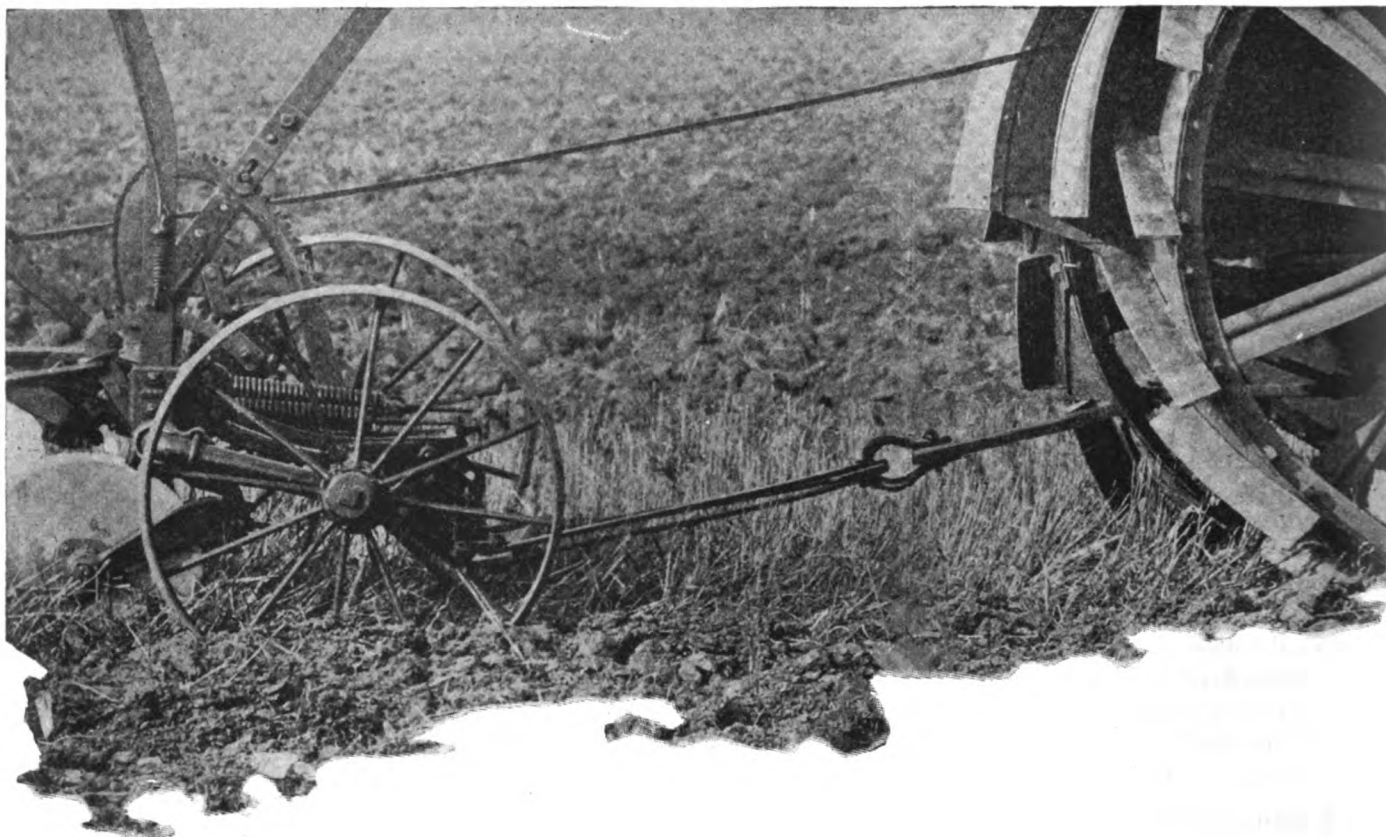
things. No one is in better position to make gifts that will delight without an expenditure of money than the womenfolks on the farms. There are some real good suggestions contained in the Christmas articles in the department "Mechanics in the Home" in this issue of FARM MECHANICS. ✚

EGGS and butter, two "cash crops" of the farm, sometimes termed "mother's money," were rapidly mounting in price when this was written. There are two methods by which eggs and butter may be fairly plentiful on the farm at this season—early hatched chicks, which become layers in the fall, providing they are well housed and carefully fed, and fall freshening cows. Thru the work of the extension departments of the agricultural colleges and of the county agents the hen is becoming an important farm asset, or rather is gaining the recognition she deserved. Well-bred stock and right management give greater returns for the labor expended than almost any other department of the farm. ✚

WATER in the outdoor tanks will be better for the stock if the chill is taken off it. A tank heater does the business and helps maintain good stock health. Ice cold water taken into the stomach, especially in winter, requires a lot of heat to bring it up to the temperature of the body. And it requires good feed to create body heat. ✚

FAIRS and expositions of farm livestock and products are over. The boys and girls of the clubs were more prominent than ever this year. Competition is a wonderful incentive to learn and profit by that learning and the experience derived from the club work. No boy or girl who wants to join a club should be denied the privilege. ✚

AFTER December 21, when "the days grow longer and the cold grows stronger," there is a great satisfaction in the comforts and conveniences that are available for the farm home. Water piped into the house means no trips thru the snow to a frozen pump; a furnace means caring for the fire in the basement without littering up the house; an electric light and power plant means well-illuminated homes and power for the vacuum sweeper, the water system and heat for an electric iron. All of which cost money, but are worth all they cost in satisfaction. ✚



It's the power at the drawbar that counts. Hyatt Roller Bearings help maximum power to reach this vital point. And Hyatt Bearings do this particular job better. That is why they are used in all of the leading tractors.

HYATT ROLLER BEARING COMPANY

Tractor and Implement Bearings Division, Chicago

Motor Bearings Division, Detroit

Industrial Bearings Division, New York

Pacific Coast Division, San Francisco, Calif.

HYATT

ROLLER BEARINGS



How to Market Farm Products

WE'RE good farmers here in America. Six and one-half million farmers in the United States, assisted by a smaller number of farm laborers, represent probably less than 4 per cent of the farmers of the world. Nevertheless, this 4 per cent produces about:

- 70 per cent of the world's corn.
- 60 per cent of the world's cotton.
- 50 per cent of the world's tobacco.
- 25 per cent of the world's oats and hay.
- 20 per cent of the world's wheat and flax.
- 15 per cent of the world's barley.
- 7 per cent of the world's potatoes.
- 5 per cent of the world's sugar.

In the United States, the production of cereals alone amounts to about 12 tons for each person engaged in agriculture. In the rest of the world, the production of cereals averages only 1.4 tons for each person engaged in agriculture. So you see, we're good farmers in America, but—

In spite of our ability to produce, we do not sell nearly all of what we produce. It has been said, and it is probably true, that nearly 50 per cent of the fruits grown in the United States never reach a consumer. There is an appalling loss of products, and there is, perhaps, a bigger loss in price, due to the lack of knowledge on the part of those who have agricultural products to sell.

We must learn how to market.

We often hear complaints against middlemen made by farmers who have not received returns equal to the value of the products sold. No doubt many of these complaints are entirely justified. But if we face the facts, we can readily see that the reason middlemen take advantage of farmers is because farmers do not know what they should about marketing, and so they are easy prey to unscrupulous persons who pose as beneficent workmen who are eager to help farmers market their products to advantage.

This need for marketing knowl-

edge has long existed, but it only recently that a real definite and concrete agency has been inaugurated to supply farmers with the truth about marketing.

This agency is known as the American Institute of Agriculture. It was founded, and is directed by George Livingston, who resigned the position of Chief of the Bureau of Markets, United States Department of Agriculture, to accomplish this work, which he could not do thru the department.

In its ambition to lead the way, **FARM MECHANICS** has made arrangements with the American Institute of Agriculture and its corps of over 100 authorities to provide the readers of **FARM MECHANICS** with authoritative information about marketing farm products. In each issue, beginning with this one, there will appear a marketing department of short, pithy, pertinent articles that will be of real, practical help to our readers.



BECAUSE they realize that alfalfa hay is now the cheapest source of protein, careful feeders are paying particular attention to the seeding of alfalfa.



BACK HOME
FOR CHRISTMAS



The marketing of farm products has been characterized as "the other half of agriculture." We have shown the world how to produce the best of products in the largest quantities, and the world depends upon us for its food and clothing. But as farmers, we have not received the full worth of the products we have sold. And so this department has been inaugurated to supply the marketing information necessary to enable farmers to benefit from all marketing situations. The articles in this department are supplied by members of the staff of the American Institute of Agriculture, an organization formed to disseminate authoritative marketing knowledge.

How to Borrow Money on Farm Products

WHY is it that my local banker will not lend me money when he knows that I have 1,000 bushels of wheat in the stack? More than one farmer has asked that very question, and he has become "sour" on his banker simply because the banker did not take the trouble to explain to him the reason for his refusing to consider grain in the stack as good collateral to secure a loan.

Some time ago the government recognized that farmers were often handicapped in securing loans with crops as collateral. And so Congress provided a way, which even yet is not commonly understood. If your wheat is threshed and is stored in a licensed warehouse, your banker or any other banker, would gladly loan you money equal to a good percentage of the value of the wheat.

The difference is this: When your grain is in the stack it is not in marketable condition. If you should default on your loan, and your banker should have to

take the wheat, he would have to engage in the farming business, at least in so far as threshing and hauling the grain to market is concerned.

When your grain is in the warehouse, you can secure a negotiable warehouse receipt from the warehouse owner, and this receipt serves as your collateral with the banker. The banker can easily sell the receipt, or rather the grain which it represents. And he can do it without going into the farming business or any other business except banking.

Warehouse receipts can be secured on other commodities besides wheat. If you are in need of a loan and have farm products in your possession, the thing to do is to ask your banker about accepting a warehouse receipt as collateral for the money you need.



Why the World Depends Upon Us for Food

THE United States supplies more of the exports of agricultural products than all of the rest of the world put together. There are a number of reasons for that. One of the principal ones is that not all of the world has sufficient rainfall to produce enough food to supply its own people. As a matter of fact, there are only seven areas in the world in which there is sufficient rainfall to produce farm crops.

It requires ordinarily from 20 to 40 inches of rainfall to produce our staple crops. When the rainfall is less than 20 inches, the yield drops below a profitable amount, and when it is more than 40, it drops below a profitable amount. Some sections have so much rainfall that practically no crops at all can be grown. In one section of Alaska, for example, the rainfall amounts to over 165 inches a year.

When you realize that there are



Marketing Chickens Profitably Means Having Good Stock and Being Able to Get the Birds to Market at the Right Time.

only seven areas in the world that have the right amount of rainfall, you can understand that it will pay us from now on to study world conditions in order that we may take advantage of the needs and supply food to the rest of the world at a profit.

The seven areas of sufficient rainfall are as follows: Central and Eastern United States, Southeastern Asia, Eastern South America, a narrow strip along the Eastern and Southern coast of Australia, Southern Africa, Europe, and the Northwest coast of North America.

Europe is the world's greatest buyer. We sell more of our products to the United Kingdom (England,

for shipment must pay a fine of \$5 for each egg that is not strictly fresh.

To benefit from this rule, the Danish co-operative egg society known as "The Dansk Andles Eggexport," had all of its eggs stamped, so that any egg could be traced back to its original producer. Thus, if an egg in England were discovered to be bad, the complaint bearing the number found on the egg, could be traced right back to the man who owned the hen who laid the egg, and he could be fined forthwith. As a matter of fact, this policy prevented the marketing of any bad eggs, and fines practically never occurred.



Cost of Hauling Farm Products to Market is an Item that Should Not be Overlooked. A motor truck is speedy and enables the farmer to quickly reach the best market.

Ireland, Wales and Scotland) than to any other nation. Germany is our second largest buyer, and as a matter of fact, all of our really important customers are in Europe.

That is why we farmers must be interested in what happens in Europe and must learn how to market our products so as to take advantage of the need of that continent.



Five Dollars Fine for Each Bad Egg

IF WE were to follow the methods that have built up such a wonderful egg trade for Denmark, our poultrymen could get more for their eggs and so make more profit.

The way that Denmark built up her splendid trade with England was by maintaining unusually strict regulations with the members of her co-operative egg selling societies. One of the stringent rules is that the producer who brings a bad egg to the association

It is difficult, of course, to inaugurate a plan of this sort. Each producer is suspicious of his neighbor producers, and fears that any good intentions he may have may be thwarted by the laxity of some other member. Furthermore, there is always a fear that eggs may be carelessly gathered by some employee from new nests, with the possibility that the eggs were old before gathering.

In other words, American farmers have not yet reached the point where they are willing to stand back of what they sell. This applies not only to the selling of eggs, but to the selling of other products. That is why so much farm produce is bought at a price under its real value. Anyone is willing to pay more for a guaranteed article than for one that is not guaranteed.

We can well take a lesson from Denmark, because Denmark's methods have been a success over a period of years. She has built up not only a big egg trade, but a big butter trade, and a big trade in bacon. And this has all been built on guaranteed quality.



Letters Home From College



Bill Gives His Father Some Idea of What Farmers Owe to Agricultural College Men and Some of the Facts They Have Uncovered About Hog Raising

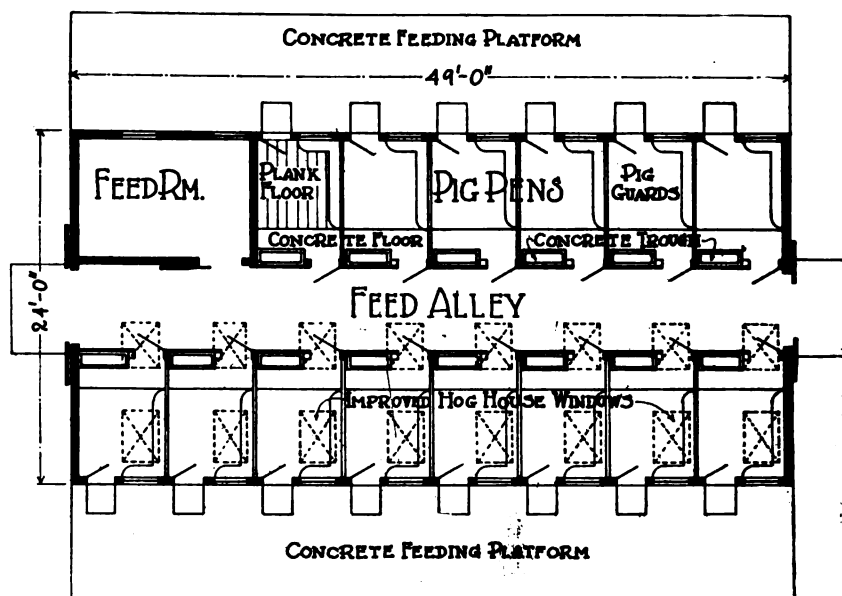
DEAR DAD: Here it is close to Christmas and I have been at the Agricultural College ten weeks. Another three weeks and I will have finished the first term.

These have been great weeks for me. Before I came to the college I thought about it the way the average kid thinks about school—you have to go because your dad makes you, and you have to study because the teacher makes you. I was all wrong. We study here at college because we want to. No one makes us. There are no strings on us, and no compulsion, other than that which we put on our selves.

When you stop and think about it, the state is pretty good to us. The college itself, the buildings, laboratories, experiment farms and the instructors all are furnished for no other reason than to give us farm boys a chance to study and learn about the business of farming. I wonder if all the boys on the farm appreciate that fact. A great many do, as the registration of students here this year is the greatest in the history of the college and I doubt if any more could be accommodated. The more boys who come, the more work there is for the faculty and staff, but they seem to like it. Probably this is because they have a satisfaction in knowing that their work is appreciated.

Think of what it must mean to these professors to spent a year or two making an investigation, usually studying

still and listening, the real concrete facts that their long hours, and weeks and months of study and work have



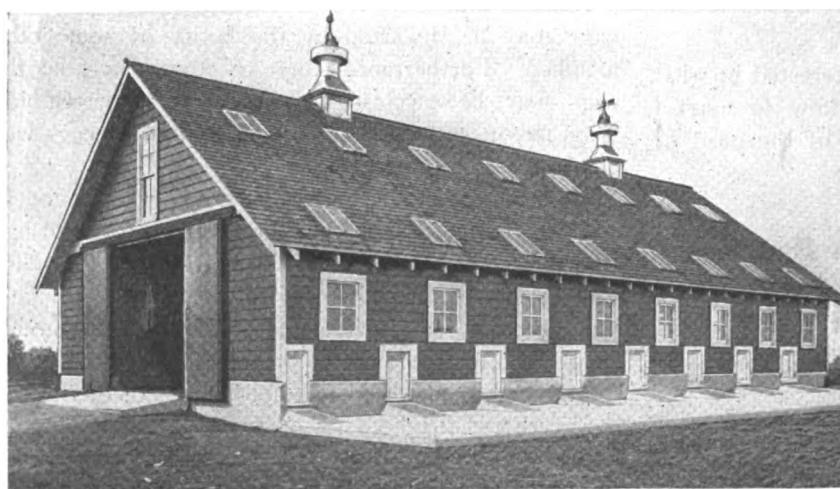
Floor Plan of Iowa Type Hog House Showing Interior Arrangement.

some one thing which to those who don't know would at first thought seem silly. Then all their work is condensed into a report, and is given to us in half an hour or so. We get, by just sitting

developed. And we accept what is given to us in a matter of fact way, when we should be devoutly thankful that there are men who have the good of the farm boys, the farmers and the whole country enough at heart to do this great work.

I couldn't help but think of this the other day when I was listening to a lecture on "Sunshine in Hog Houses." We take sunshine and rain and snow as a matter of course, without thinking very much about the effect of any of these elements on hogs. But when sunshine is applied to hogs it means much.

In years gone by swine lived outdoors. Sows farrowed their young in protected places, under a rocky ledge on a hillside, or in the woods. There they had plenty of fresh air and when the weather was favorable sought the sunshine in open places. Under these conditions some of the young pigs lived, while others died. It was to insure bringing a greater percentage of the young to maturity that houses of some



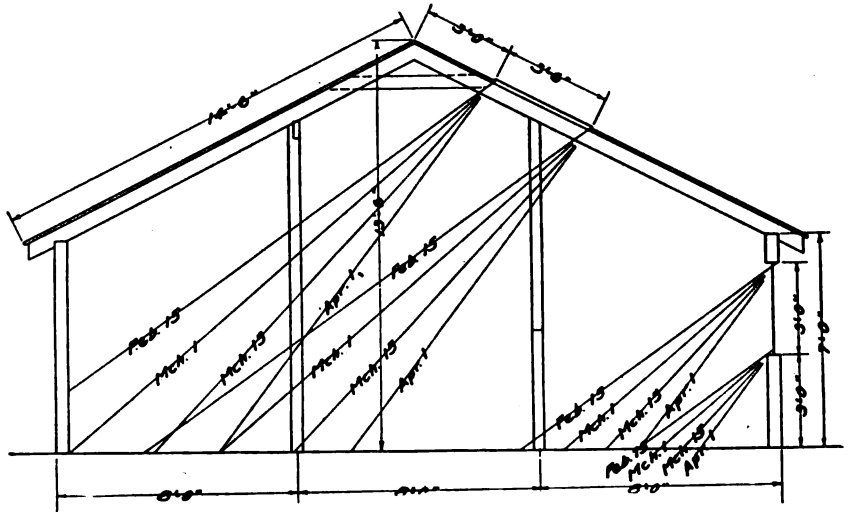
Gable Roof Hoghouse, Known as the "Iowa" Type, Showing Arrangement of Windows To Get Advantage of Sunshine.

sort were provided for the sows at farrowing time. At first these shelters were crude affairs that did little more than provide shade in summer and some protection from winds in winter. These hog houses were found on practically all farms when the men in the Agricultural Engineering and Animal Husbandry departments of the colleges began studying the housing needs of swine.

These investigations resulted in the modern hog house designs, of which there are two distinct types—the gable roof house and the half-monitor, or saw-tooth roof house. Both of these houses are designed to provide several essentials, sunshine and light on the pens, warmth, dryness, ventilation and sanitation.

With the exception of ventilation, sunshine promotes all of these things in the hog house. Direct sunlight destroys disease-causing organisms; it provides the warmth that is essential for pigs that are farrowed in late winter or early spring; it promotes dryness, which is especially desirable because a damp house is not a healthful house. The ideal hog house would be one that is so constructed that every part, floor and walls, would be struck by direct sunlight some time during the day.

Sunshine, of course, is admitted to the hog house thru windows. The right location of these windows has been the subject of a great amount of study, for in the cornbelt every bit of available sunshine is needed during the spring farrowing season. This problem has been scientifically worked out, so that in either the gable-roof or saw-tooth roof houses the greatest possible amount of the sun's



Showing Position of Sun at Various Dates in Latitude of Central Iowa, as Admitted by Roof Windows in Iowa Type of Hoghouse.

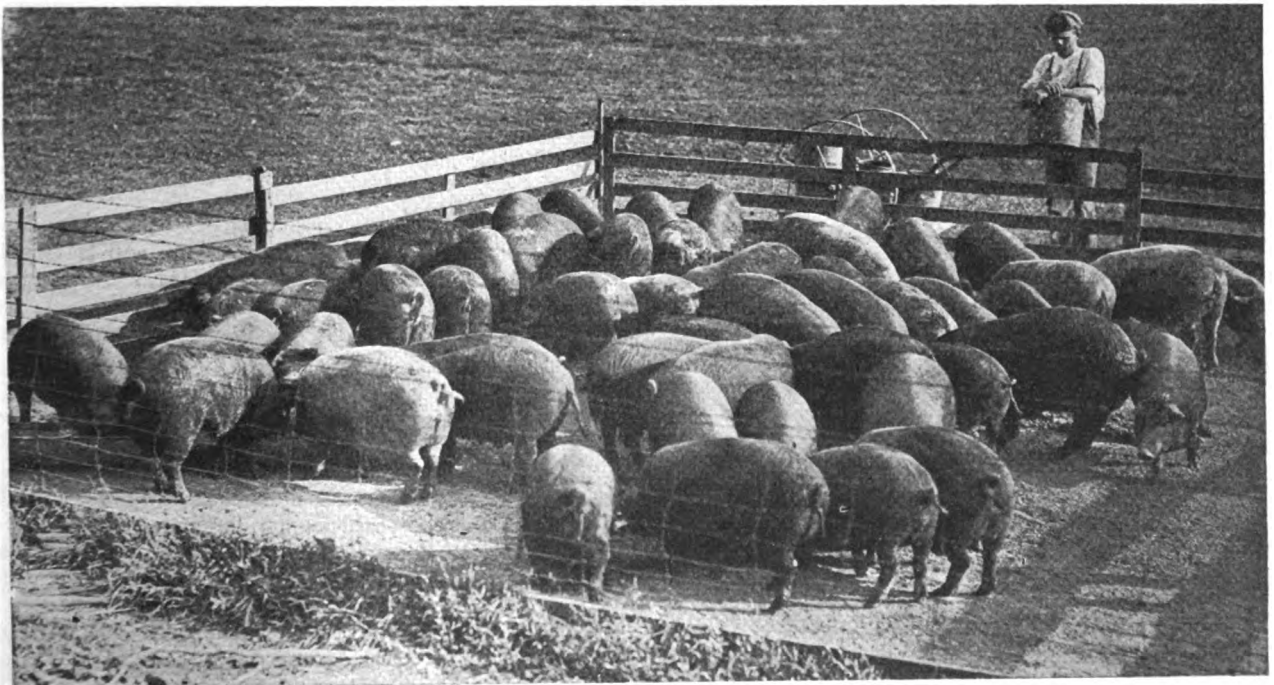
rays are admitted to the pens, warming the house, helping to keep it dry and giving light for the convenience of the caretaker.

Ventilation calls for the constant admission of fresh pure air and the carrying away of the foul air. The air exhaled by the sows contains considerable moisture. In cold weather this moisture condenses and forms drops of water on the walls and ceilings of the house, unless there is a system of ventilation to carry the dead air out of the house. Damp, "clammy" hog houses mean sick sows and oftentimes death to the little pigs.

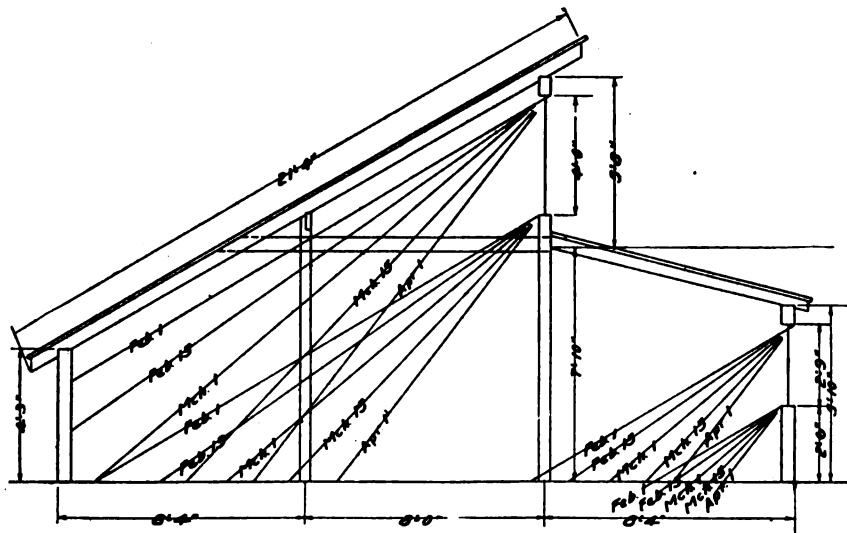
Clean pens is another essential in the hog house. When sows farrow, many swine raisers put in a cot, or board platform for the mother and pigs. This

cot is constructed so that it is raised slightly from the floor, which usually is of concrete or a combination of hollow tile with a thin top of concrete. The bedding is placed on this cot and with few exceptions the sow and pigs will not befoul it. The space between the cot and the floor permits a circulation of air, which keeps the bedding from becoming damp and also prevents the cold from the floor reaching the pigs.

These houses are so constructed that they may be used the year around. From each pen there is a door at the ground level which usually opens on a concrete feeding floor outside. If the pen partitions are removable, they are taken out in the summer, giving the hogs a cool place in which to go thru the heat of the day.



A Concrete Feeding Floor Adjacent to the Hog Pasture Saves Feed and Gives the Animals a Clean Place from Which to Eat.



Showing How Sunshine Hits the Pens in a Saw-Tooth Roof Hoghouse.

Those are some of the things we boys were told about hog house construction and the reasons why the modern buildings are designed as they are. They are facts worth knowing, for when it becomes necessary to build a new hog house, we will know what to look for in the building plans and build accordingly.

Here at the college great stress is laid on the importance of well-constructed and correctly planned buildings. Regarding the benefits of a good hog house, the lecturer asserted that "it would pay most farmers who raise hogs to have their houses remodeled, so that sunlight may be admitted and the proper ventilation secured."

It seems as tho I devote most of my letters to lectures, but I know that these things I am learning are interesting to you.

Now I have a surprise for you, or maybe it won't be such a surprise after all. Evelyn and I have come to an understanding, but of course the great event will not happen until after I am thru school. I will write mother a letter and tell her all about it. Evelyn may come up and take a course in domestic science, poultry husbandry and kindred subjects. She was very much interested in those things when she was here, and had a

chance to listen to some of the lectures and get acquainted with the girls, thru Sarah, who is here. I know you and

WHO DID MOST FOR FARMERS?

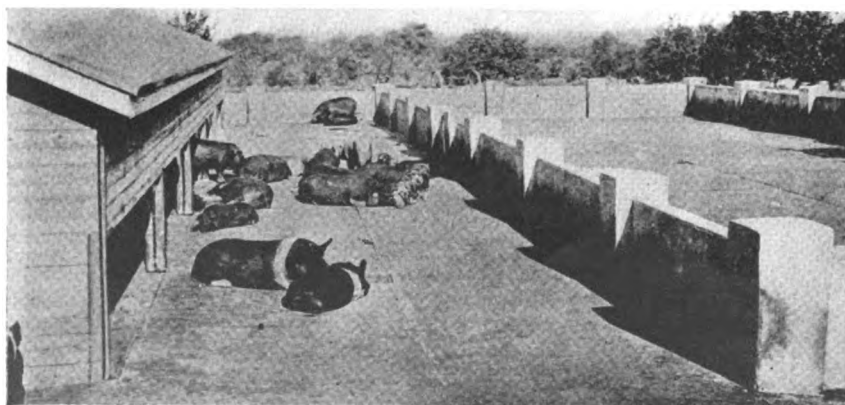
There are thousands upon thousands of men who are devoting their lives to the advancement of American Agriculture. On the opposite page, under the title, "Who Did Most For Farmers?" are shown the portraits of four of these men, together with short sketches of their lives and works. This is the beginning of a series, by which FARM MECHANICS expects to introduce its readers to some of these men.

NOW—Who do you think has done most for farmers? Write to the Editor of FARM MECHANICS and suggest the names of men, or women, for that matter, who have "Done Most for Farmers," and give the reasons for your selections. And then watch for the reproduction of their photographs and short biographical sketches.

mother both like her and will welcome her into the family.

Your affectionate son,

BILL.



Concrete Feeding Floor Outside of Hoghouse Promotes Comfort of Animals.

THERE are winter short courses for every member of the family at the agricultural colleges. Two weeks there will work wonders for mother and daughter, who will profit by what they may learn from the home economics instructors. Father and son, too, will be better farmers by attending the lectures on better farm methods. It will be a welcome vacation, too.

THE trapping and hunting season is on. There is a big profit in trapping fur-bearing animals, and this source of revenue for the boys has now been taken up by the men in sections where these animals are found. The first fall of snow in the colder sections send many men afield for rabbits. These animals multiply so fast that it is necessary to hunt them, as they do great damage to young trees and other forms of vegetation. Protect and feed the friendly birds, such as quail, during the winter.

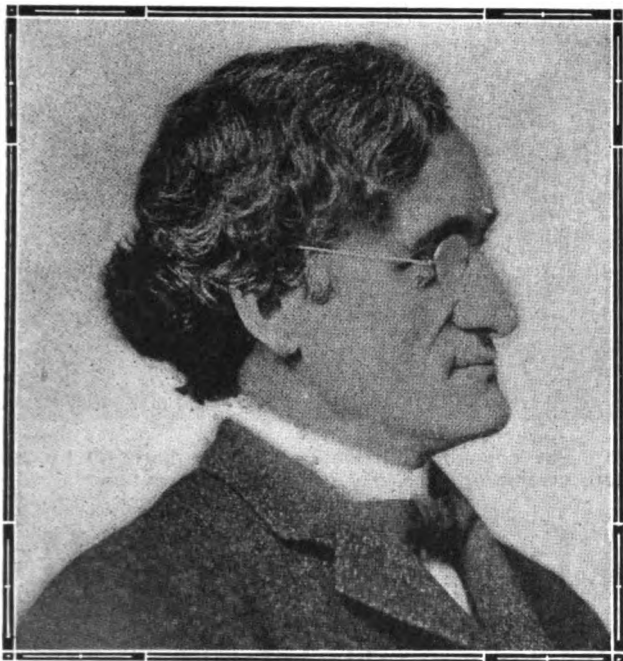
BUTCHERING time has come. Here are some suggestions of the U. S. Department of Agriculture regarding the butchering and curing of meats: Cleanliness is a most important factor as meats easily become tainted. Save all pieces of meat, as there are many ways of converting them into a palatable product. All waste fat and trimmings should be rendered and the product used to make soap. Bones should be crushed or ground for chicken feed. Never put meat in cure before the animal heat is out of it. Always pack meat skin side down when in the curing process except the top layer in a brine cure, which should be turned skin side up. Keep close watch of the brine; if it becomes "ropy" change it. Do not forget to change or turn the meat several times during the curing process. Slow smoking is better than rapid smoking, and there is less chance for the meat to drip.

LEGUMES are always ready to help lessen the fertilizer bill. "Give them a fair chance, treat them as you would a true friend, and you will be repaid a hundredfold; remember, it is the legumes that have been credited not only with boarding themselves, but paying for the privilege," say soil fertility experts.

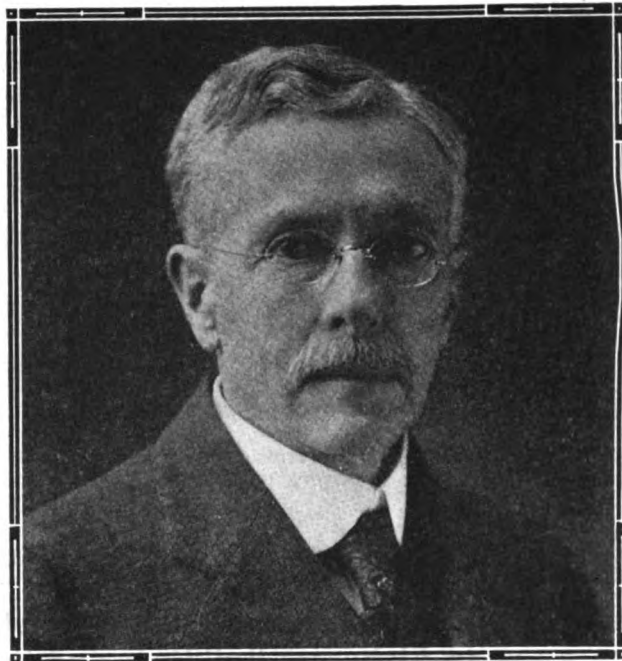
BOTH feed and care of 1,600,000 hens giving no returns were saved in 1921, reports to the United States Department of Agriculture show, when farm women, practicing for the first time the method of identifying nonlayers demonstrated by agricultural extension workers, culled these "loafers" from their flocks.

A certain community club of farm women reports 2,065 healthy chicks from hatches totaling 2,486, as a result of following the methods of sanitation.

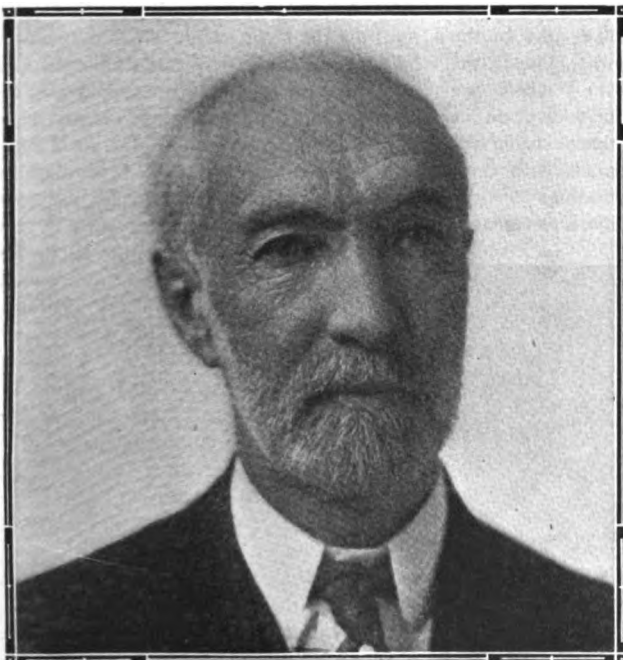
Who Did Most for Farmers ?



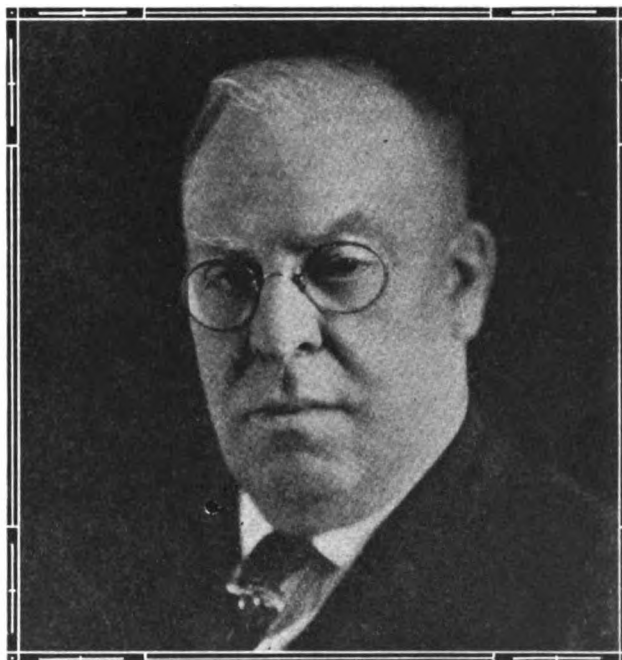
WHETHER LIBERTY HYDE BAILEY will be longest known as educator, scientist, naturalist, author, poet, lecturer or editor, is not for this generation to attempt to decide. He has won distinction in all these fields. Dr. Bailey has given particular attention to botany, horticulture, and rural life problems. The author of so many books on agriculture and country life subjects that they cannot even be enumerated here, and editor of still more, perhaps it is for his cyclopedias of agriculture and of horticulture that he is chiefly known. Since he retired as dean of the New York College of Agriculture, a position he held from 1903 to 1913, after seeing it thru the critical years of its youth, he has continued to live in Ithaca and has devoted all his time to his literary work and to botanizing expeditions.



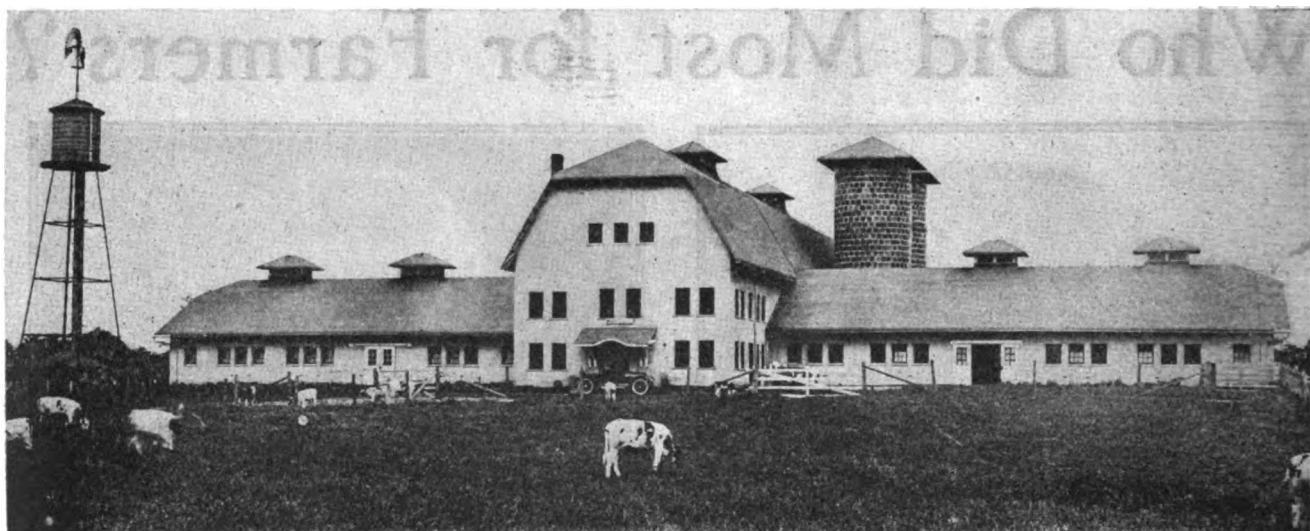
DR. H. P. ARMSBY was before his death, October 19, 1921, for more than 40 years identified with the work of our agricultural educational institutions. He is now generally recognized as having been the greatest known nutrition chemist. His greatest contribution to the scientific feeding of animals was the development of the respiration calorimeter, an apparatus which measured the income and outgo of matter and energy in animals. Dr. Armsby at the time of his death was head of the Institute of Animal Nutrition at Penn State College. He began his service with agricultural colleges at the Storrs Agricultural College, now the Connecticut Agricultural College, in 1877. In 1883 he became chemist at the Wisconsin College of Agriculture, leaving there in 1887 to organize the experiment stations of Pennsylvania.



AS the "father of farmers' institutes in Indiana," PROFESSOR WILLIAM C. LATTA, of Purdue University, is undoubtedly one of the best known men to farmers of his state. Altho Professor Latta is 72 years of age, he continues in active charge of this work, which he started in 1890. Between Nov. 1 and March 1, last, 472 institutes were held, with an attendance of nearly 200,000 farmers. Professor Latta was born in LaPorte County, Ind., in 1850. After finishing in the common schools he attended the Michigan Agricultural College and in 1877 was graduated with a degree of Bachelor of Science in Agriculture, later taking advanced studies and securing the degree of Master of Science in Agriculture in 1882. The same year he joined the faculty of Purdue and a year later was made Professor of Agriculture, a position he has since held.



FOR 43 years J. B. BARTHOLOMEW, president of the Avery Co., has been serving the implement and machinery needs of American farmers. In 1879, at the age of 16, Mr. Bartholomew became connected in a minor capacity with the E. H. & C. M. Avery Co. His advancement was rapid. In 1892 he was put in charge of the thresher division of the company, and in 1907 became its president. Mr. Bartholomew was born on a farm near Peoria. His father was a thresherman, and the boy in his early teens was an expert operator. During the years that followed he developed an inventive genius that has resulted in many patents on threshers, tractors and road-building machinery. Recently Mr. Bartholomew was elected president of the National Association of Farm Equipment Manufacturers. His home is in Peoria, Ill.



Main Building at Maryland Farms, Near Grand Rapids, Mich. The one-story portion is the dairy barn, 40 by 200 feet, while the two-story portion contains the horse barn, creamery, office, hay storage and dormitory.

These Cows Dwell In Marble Halls

Herd of Dudley E. Waters on Maryland Farms, Grand Rapids, Mich., is Housed in Elaborate Buildings and Contains Some Notable Animals

MICHIGAN long has been noted for its herds of fine Holsteins. Brought into the limelight as a home of high-producing dairy animals by the "King of the Pontiacs," this state may well be proud of the dairy cows that are found in its breeding establishments and on its farms.

Because of the prominence of the owner, the quality of the sires and matrons in the herd, and the beauty and practicability of the buildings, Maryland Farms, near Grand Rapids, stand out as one of the notable breeding establishments of Michigan. Dudley E. Waters, owner of Maryland Farms, has been a prominent figure in the Holstein industry

for years. Two years ago it was Mr. Waters who represented the Holstein-Freisian Association in its investigation of the needs of the European dairymen and it was under his leadership that American breeders gave pure-bred young bulls to aid in replacing the nearly half million cows that were destroyed during the war.

Maryland Farms are just outside the city limits of Grand Rapids. The farms cover about 500 acres, all of which are under cultivation with the exception of the wooded shores of three spring-fed lakes that furnish the farms with their water supplies. The buildings on the farms, especially that which is designated

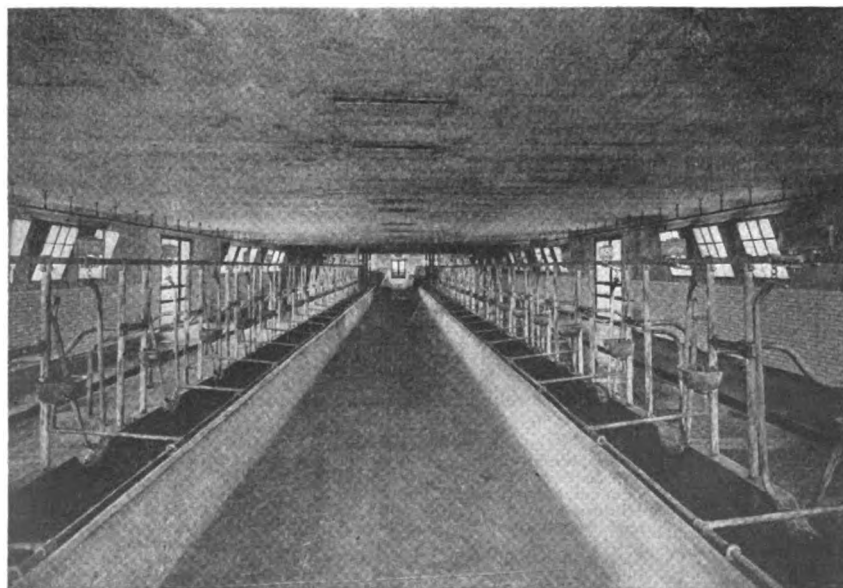
the dairy barn, are most elaborate.

The main dairy barn is of frame construction, stuccoed on the outside and lined inside the stable with enameled brick. The cow stable is 40 feet wide and 220 feet long, and one story high. Here are 106 single stalls. The stable floor is of concrete and the stall floors of cork brick. Steel stall partitions are set into the floor, while steel stanchions hold the animals. At the stallheads are individual drinking cups, supplied with spring water from the lakes. Many windows light the stable, while the air is kept pure by a modern system of ventilation.

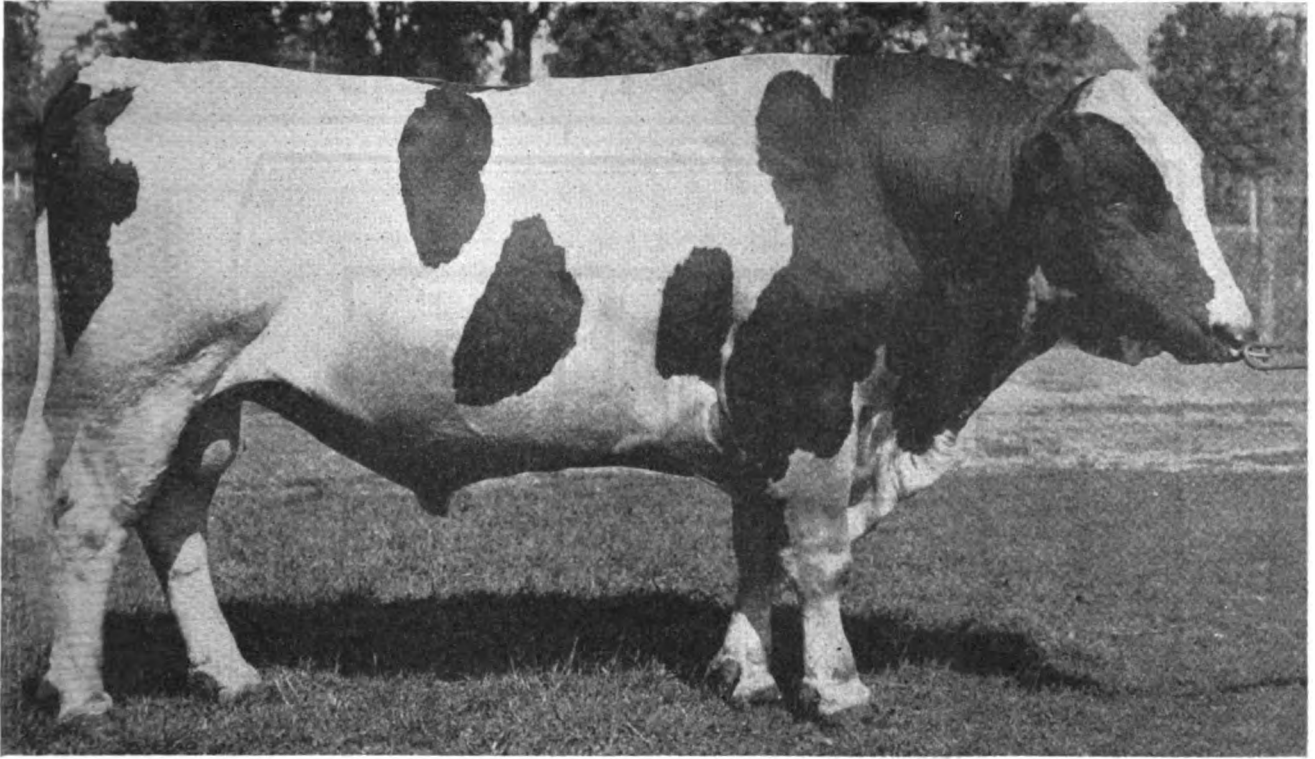
This main building, of which the cow stable is the largest part, is built in the shape of a cross. One wing, 40 by 96 feet, is for horses, while at the front is another, 30 by 40 feet, which contains the milk room, test room, office and locker room, creamery and bottling room. Overhead is a dormitory equipped with shower baths and containing a club room for the farm employees.

Two vitrified tile silos, 55 feet high, have a capacity of 700 tons of feed, while the mow floor of the central building will hold 300 tons of hay. On the main floor of this building are feed storage and feed rooms. In the rear of the feed room is another large space devoted to box stalls. At the south end of the cow barn is connected a calf and heifer barn 100 feet long, with room for forty head of stock.

The equipment of this milk production plant is modern. The machinery is driven by electricity, even to the hay hoist. In the creamery are aerators and bottling machine; the washroom is equipped with a mechanical bottle washer and steril-



Interior View Looking Thru the Feed Alley of the Dairy Barn at Maryland Farms.



"Colantha Sir Korndyke Clothilde," Senior Herd Sire at Maryland Farms.

izer. Electrically driven pumps and windmills pump from deep wells into a 12,000-gallon storage tank resting on a 60-foot steel tower with a 14-foot windmill on top.

The Holstein herd of Maryland Farms numbers 150 head. Notable individuals in the herd are "Colantha Sir Korndyke Clothilde," the senior herd sire, and "Changeling Queen," twice a 36-pound cow.

"Colantha Sir Korndyke Clothilde" is a veteran, as bulls go. He was born December 1, 1910, hence has passed his twelfth year. His sire was "Colantha Johanna Lad," famed far and wide as one of the best bulls that ever lived,

measured by the unerring rule of achievement. His offspring include 140 daughters of A. R. O. record, including twenty-six with weekly butter records of 30 to 36 pounds, among which were "Dutchland Colantha Danver," with 36.25 pounds; "Dutchland Colantha Aaggie Cornucopia," 34.76 pounds; "Colantha Abby Hartog," 33.53 pounds; "Colantha Pontiac Rag Apple," 33.06 pounds, and "Dutchland Colantha Vale," world's champion two-year-old, with an annual milk record of 22,750 pounds. "Clothilde's" dam was "Susie De Kol Paul," with a seven-day official record of 31.44 pounds and a butterfat percentage of 5.25. Others in the ancestry of this great bull

are the famous old "Sarcastic Lad," international grand champion at the St. Louis exposition, the paternal grandsire. The paternal granddam was the wonderful "Colantha 4th's Johanna," world's champion butter and milk producer at the time with 35.22 pounds of butter and 651.70 pounds of milk in seven days and a yearly record of 1,247.83 pounds of butter and 27,432.50 pounds of milk, world's records when made. The maternal grandparents were "Sir Korndyke Manor De Kol" and "Susie De Kol Paul," with great records at their backs and descended from equally aristocratic lineage. He has seven A. R. O. daughters with seven-day milk records of over 600 pounds. He was awarded grand championship at West Michigan State Fair for three successive years and he also has a son and daughter who are grand champions.

"Changeling Queen" was born March 9, 1913. Sire, "Correct Change"; dam, "Netherland Johanna Queen."

At 7 years, 1 month, 6 days, her record stands: Butter, 7 days, 38.92 pounds; milk, 569.30 pounds; average, per cent fat, 5.47.

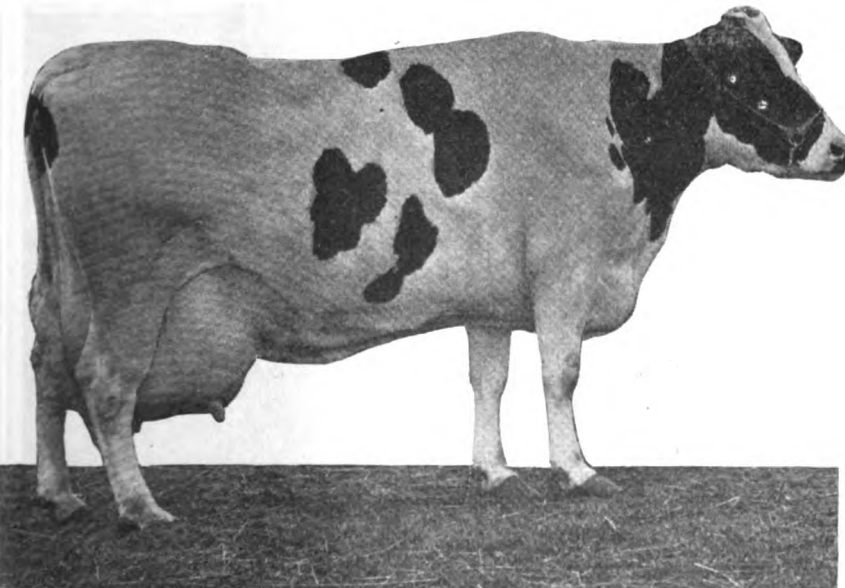
At 5 years, 11 months, 19 days: Butter, 7 days, 36.02 pounds; milk 596.00 pounds; butter, 14 days, 65.59 pounds; milk, 1,223.40 pounds.

At 3 years, 9 months, 16 days: Butter, 7 days, 25.87 pounds; milk, 564.80 pounds.

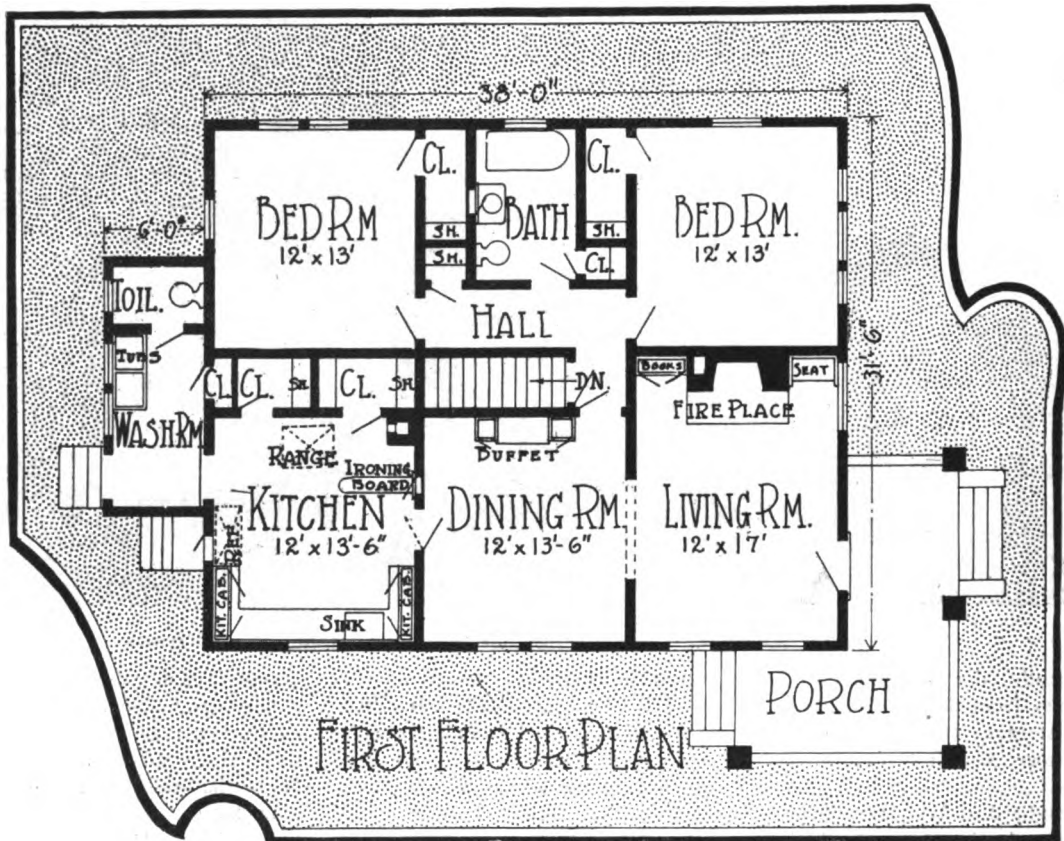
At 2 years, 7 months, 1 day: Butter, 7 days, 15.46 pounds; milk, 385.00 pounds.

It will be noted that she milked over 80 pounds of milk a day for 7 days during three lactation periods.

Maryland Farms is an establishment well worth a visit.

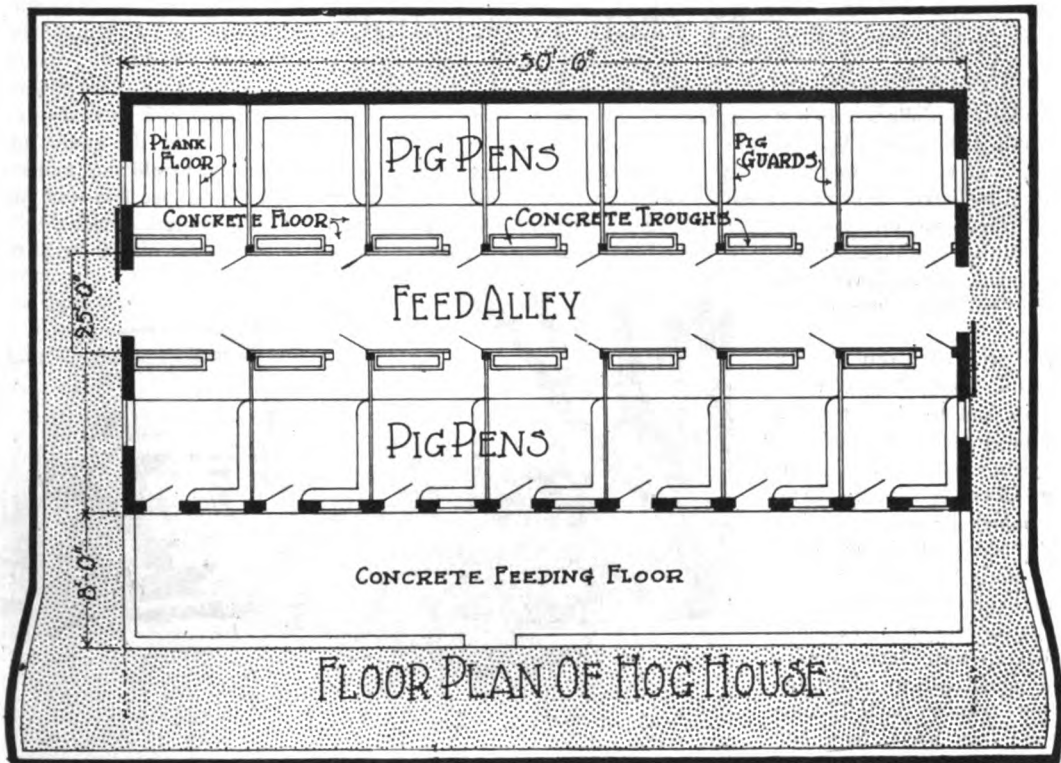


"Changeling Queen," Twice a 36-Pound Cow, One of the Good Matrons at Maryland Farms.



FIVE-ROOM FARM BUNGALOW. This attractive little house contains five conveniently arranged rooms, as shown by the floor plan. The building is 31 feet, 6 inches wide and 38 feet long. Three rooms, living and dining room and kitchen, are ranged along one side, while on the other are two bedrooms, with the bathroom between them. The exterior is made attractive by the brick foundation and brick supports for the porch columns. The building is of frame, with the exterior walls covered with shingles, which adds to the appearance of the house. This is a very desirable design for a small family or for a tenant house.

FARM MECHANICS BUILDING DESIGNS



CONCRETE AND STUCCO HOG HOUSE. Here is an unusual hog house. It is constructed of concrete, the foundation walls running to the roof line. The half monitor or saw-tooth roof is of frame covered with stucco making a very substantial and attractive appearing building. The house is 50 feet, 6 inches long and 25 feet wide providing space for 14 farrowing pens, with a feed alley thru the center. Plank floors laid over the concrete in the pens provide a dry and warmer bed for the young pigs. The feeding floor outside is enclosed by a concrete wall and is connected with the pens on that side by doors. The house faces the south to get the benefit of the winter sun.

Implement Houses Pay Dividends

Farm Machinery to be Profitable Investment Must Have Better Care Than Many Farmers Give it

BY CECIL L. McFADDEN

(County Agent, Lyon County, Kansas)

THOUSANDS of dollars are lost every year by the farmers because the average farmer does not take proper care of his farm implements. Some farmers expect an old tree to protect their farm tools from the ravages of the elements, while others leave their machinery in the field, just where it was used last.

The County Agent of Lyon County is not enthusiastic about "apple tree" implement houses, and to show that he practices what he preaches, herewith is reproduced a picture of the implement house on the Lakeside Stock Farm, Stafford, Kan., which he and his father Lyman A. McFadden, built in 1912. This implement house has paid for itself a good many times since it was built.

One winter's storms and sunshine work more havoc with farm implements than the actual use to which the machines are put; wooden parts become devoid of paint; iron parts, bare and rusty; bolts loose; timbers warped; and oiled parts, dry and rust covered. Ninety-nine out of every hundred machines left in the open to waste and rust away must be repaired and their period of usefulness is reduced at least one-half. Machinery that stands in the weather runs harder because it is rusty and the joints are loose, and more horse flesh or gasoline is required to operate them.

Life of Farm Machinery

It has been determined that the average life of unhoused, uncared-for farm

machinery is about five years while properly protected implements will last two or three times that long. If a machine is worthless five years after it was purchased, it has an annual depreciation of 20 per cent. Suppose

of saving—\$75 a year—to pay for the shed, and at the same time, your implements would be more efficient and you would lose less time making repairs during critical seasons.

Farm machinery will wear out, of



"Apple Tree Implement House." This method of NOT storing farm machinery costs American farmers many millions of dollars every year.

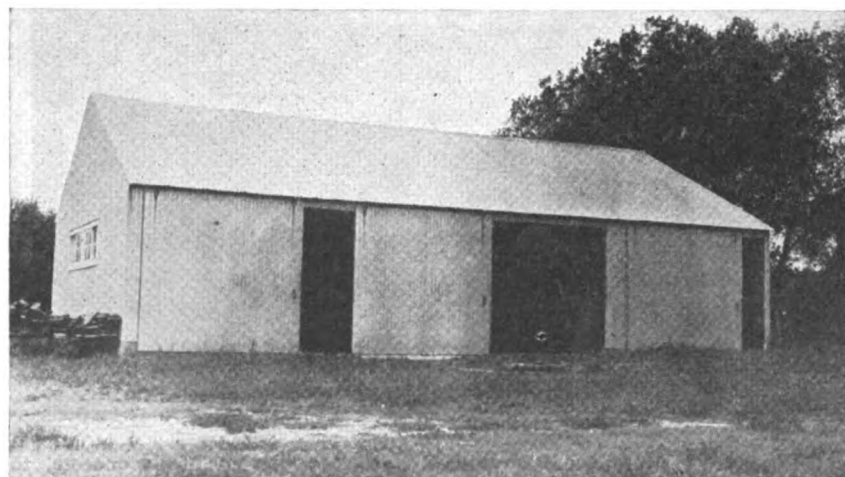
you have \$750 invested in implements, and you have to charge off 20 per cent annually to depreciation due largely to carelessness in not housing them, that is \$150. If these same machines were kept in a good implement shed, when not in use, they would last at least 10 years, and you would have 10 per cent depreciation of \$750 to charge off each year.

It would not take long at this rate

course, but why not wear it out in service, instead of letting it go to ruin for lack of care and shelter? Rust and decay cause more damage in one year than wear does in four or five. Wear cannot be avoided—rust and decay can. Dollars and cents are vitally concerned in proper protection of farm implements just as much as in the "yield per acre" of cotton, wheat or corn. The real question in regard to farm machinery is not so much its first cost, but how long will it last—how long will it give satisfactory service? The life of any farm implement is shortened or prolonged in direct proportion to the poor or good care and attention it receives.

The Value of an Implement Shed

An implement shed is one of the most important buildings on any farm, for it is a money-saver. No farmer can afford to be without one and it is far better to borrow the money, if necessary, and build such a shed than to squander many times its cost in prodigal misuse and abuse. An implement shed will double the life of farm machinery—and good machinery is too expensive to overlook such a saving. Again, if new implements must



The Implement House on the Lakeside Stock Farm, Which Mr. McFadden Says Has Paid for Itself a Good Many Times Thru Preserving the Farm Machinery.

be purchased every three or four years to take the place of old dilapidated pieces, there will be little money left for other farm improvements or to swell the bank account.

Implements must be housed and cared for, if they are to be used economically and there is no branch of farm economy that pays better dividends than the housing of implements when they are not in use. Rust and rot cost more than proper shelter. A shed for an expensive piece of machinery will cost less than that machine, and will save it for from 10 to 15 years' good service.

It is a matter of business and economy to protect your machinery from the weather as you protect your horses and cattle. Machinery, like animals, cannot live long if forced to withstand the ravages of heat, cold, wind and rain.



Making Farm Machinery Stand Up

BY FRANK A. MECKEL

"IT isn't everlastingly buying new farm machinery, but it is everlastingly keeping the old machinery in good condition that will pull you out of the rut," is the logic of Oscar Elley, a Boone County, Missouri, farmer.

Elley has been using the methods of the efficiency expert in his farming business for 12 years, and he has found that it pays to take care of what you have. With the exception of a grain binder and a tractor there is not an implement on Elley's farm that has not been in use for 10 years or more.

He has two wagons which have been in constant service for over 10 years and they are both as sound as dollars today. He paid \$96 apiece for them and they would easily bring \$125 under the hammer right now. Part of this appreciation is due to the price advance of wagons, but the major portion of their increased value is due to the fact that they are in as good or better condition today than they were 10 years ago.

Once every year, Elley takes the wheels off these wagons and soaks the felloes and spokes in boiling linseed oil. This has so penetrated into the wood that these wagon wheels could not be knocked apart with a sledge hammer.

After the soaking process, the wheels are painted in the original colors. The wagon boxes are cleaned with a brush and water and are given a coat of waterproof varnish. The result is a wagon which always looks new, and one which the weather will not damage.

His other farm machinery is taken down every year or two and thoroughly cleaned and painted in the original colors. He has one mowing machine which has been in use for 22 years and the replacements on this machine have been a new



Oscar Elley and the Mowing Machine that He Has Used 22 Years and Which Is Still in Excellent Condition. Mr. Elley finds it pays to care for his machinery and all of it is kept in tip-top condition.

tongue and a couple of gears. So far as looks are concerned, the machine looks as tho it might have come from the factory about two years ago.

The harness which Elley bought when he started farming 12 years ago is still in use. In fact, those original sets of harness are the only sets on the place. Every summer, they are all dipped into a barrel of oil and allowed to hang for 24 hours. The oil soaks into the leather and the result is a harness that is as soft as a glove, without a trace of a split or a crack. The collars for the mules and horses are given the same treatment and all are of the original purchase.

The grain binder has been in use for eight years with the replacement of one reel slat. It has been painted twice in that time in the original colors and cannot be distinguished from a new machine. The tractor has been in use only four years and the only adjustments have been those made on the bearings. There have been no other repairs required nor any repair parts.

It is the same with all the other machines. Two other mowers have been in use 13 and 14 years respectively. A dump rake and a buck rake have each been giving service for 10 years. Every year the buck rake is taken apart and the wood parts painted with linseed oil and the iron parts painted in colors just as they came from the factory. Corn cultivators, four of them, have been used all the way from 11 to 16 years. A stalk cutter has seen 15 years of hard work but you'd never know it.

When a machine is brought in from the field it is put under cover, both movements being unusual, for seldom is machinery brought in from the field on the average farm, and even more seldom is it put under cover if it is brought in.

That care of machinery has paid this man cannot be denied. Last year he sold his motor truck for \$1200. He originally

paid \$1100 for this truck and used it five years in the bargain, but when he sold it the truck was as good or better than the day he bought it, and tires were the only replacements.

Not only with the farm machinery is Elley painstaking, but everything about his farm bears evidence to the fact that here is a man who starts out with something good and then takes care of it.

His end and corner fence-posts are all black locust logs set five feet in the ground and set in solid concrete. His fence wires are as tight as fiddle strings. His gates are all hand-made of walnut. They are mounted on heavy hinges and not a one ever touches or scrapes on the ground. They all swing easily, and they are all well painted.

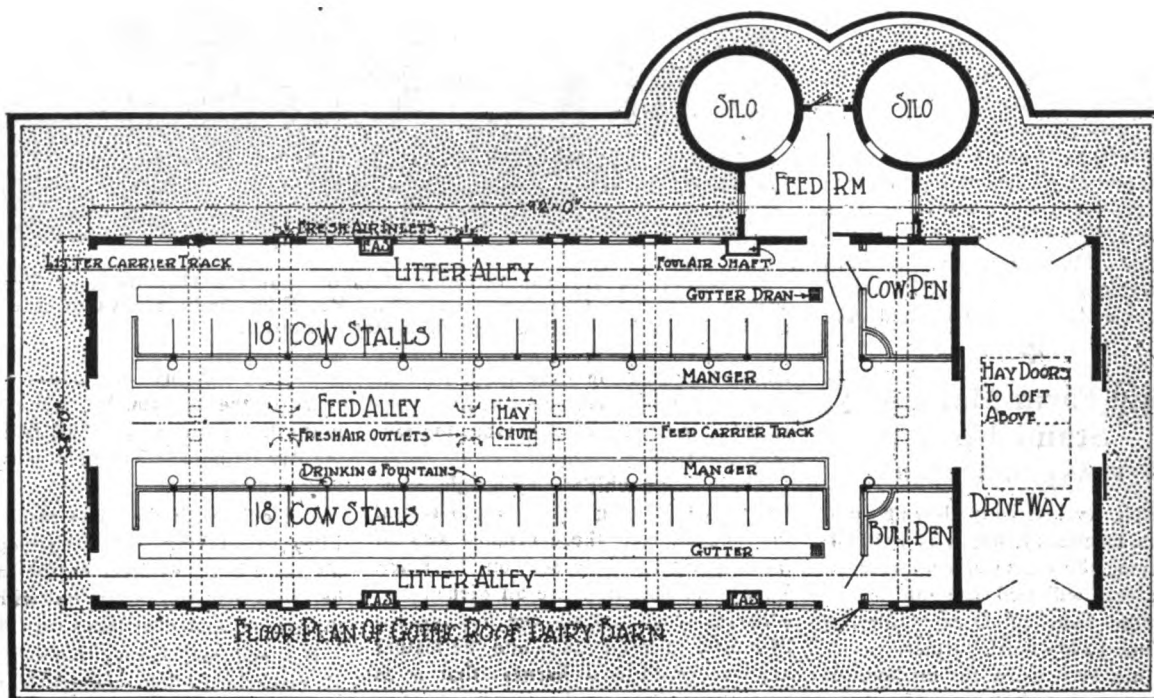
Elley is quite a cattle feeder, and all of the feeding troughs are built of solid oak and painted. When a trough is not in use, it is put away in a shed. The hog troughs are all built substantially. There are no makeshifts such as hollowed logs or wash tubs for the hogs to smash up. Elley builds them right at first and then defies the hogs to smash them up.

He uses ten times as much paint as the average man on the farm, but he believes that the paint is a paying investment, and he can prove it to you. His success with his farm, and the fact that he is using and getting the service from his original machines would indicate that he is on the right track. With the exception of the tractor, any of his machines would today sell for more than he paid for them, and the exception on the tractor is due to the drop in tractor prices.



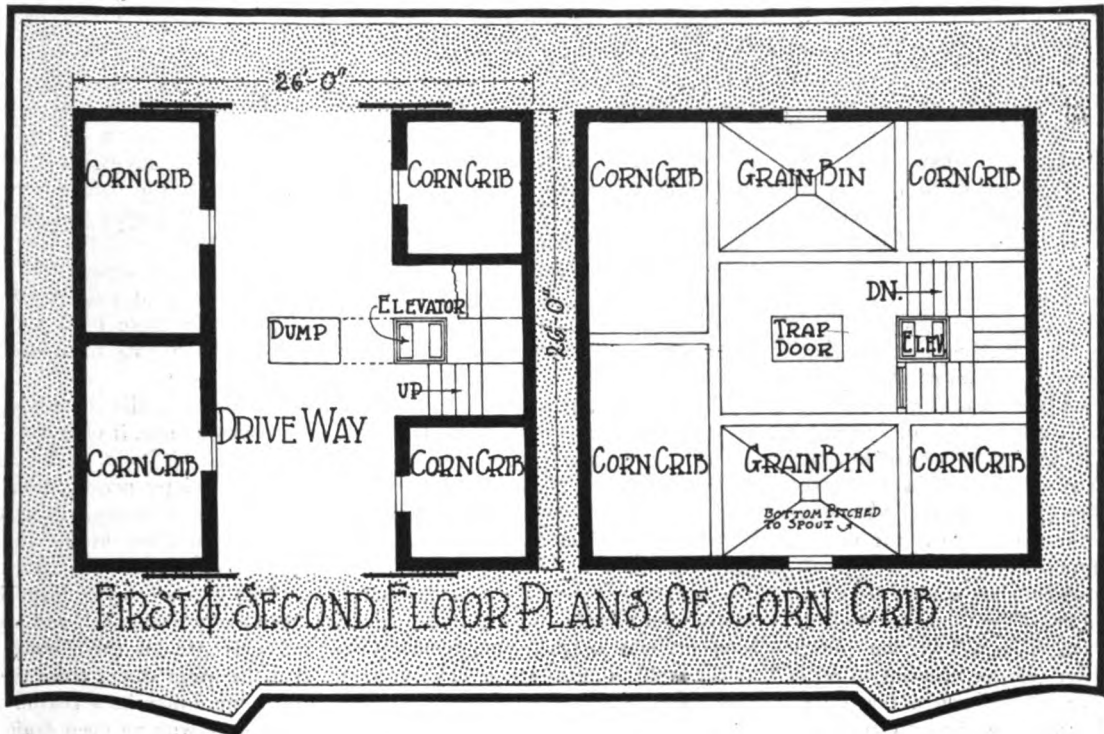
OFFERING valuable food to scrub cattle and hens that should have been fricasseed long ago is the old story of pearls before swine.

FARM MECHANICS BUILDING DESIGNS



GOTHIC ROOF DAIRY BARN. A gothic roof on a dairy barn makes it a very attractive building. The barn illustrated is 36 feet wide and 92 feet long. The first, or stable floor, contains 36 single cow stalls, as well as two pens. The stalls face a feeding alley thru the center, with the litter alleys along the sides. An unusual feature of this barn is the driveway thru one end, with an opening above it to the mow floor. Twin silos at the rear, with the feed room between, provide storage space for the ensilage, which practically all dairy farmers feed their cattle. The building is set on a concrete foundation, the walls running up to the lower window line.

FARM MECHANICS BUILDING DESIGNS



HIGH CORN CRIB AND GRANARY. This type of high corn crib and granary is most popular in the corn belt states, as it provides a safe place for the storage of the crops. The sides are of crib siding with open spaces between to provide ventilation. At the same time the corn is protected from the weather. Over the driveway thru the center of the building are the tight bins for the small grains. The building is equipped with a power elevator, which carries the corn to the four cribs, a swivel spout being the means of directing the grain to the different cribs. This building is 26 feet square.

Tractor Care In Cold Weather

Eb Dixon Expounds the Wisdom of Treating the Tractor Right During Winter Days

By K. H. LANSING

JUST because it's cold weather now and you aren't using the tractor in the field, or every day, don't think the machine won't have to be cared for," said Eb Dixon to his young nephew, Hal, whom he had trained in most respects to be a first-class farm assistant.

He had found the boy, after having used the tractor on a belt job, in the act of putting the machine away without having drained off the water. That meant a "curtain lecture" was due.

But Eb was a sensible man and never scolded. He had early learned that authority carries weight only when backed by knowledge—that it never does when peevishness or annoyance is the motive. So he continued:

"You know, Hal, we want to keep that machine in bang-up, not banged-up shape. Neither of us likes a tinkering job to put it in order just as we want to make it work. Let me tell you a few things I had to learn about the first tractor I had, the one I traded in on the deal for this one.

"When I bought that first machine, the agent said to me: 'Whatever you do with this machine, get these four points fixed in your mind when it approaches winter. Don't let the water freeze in the cylin-

der and head jackets, or it may split the cylinder and head. Don't think you can lubricate the motor properly with cold oil in winter. Don't use poor gasoline in cold weather and imagine you won't have starting difficulties. Finally, for the love of Mike, house the tractor from the storm, or it will pay you back in untold troubles.'

"Well, these words of caution made me study the machine a bit when the frosts came and I'm going to give you the benefit of what I learned. You took good care of the tractor all summer, so I don't mean to have you undo it all now.

"Iron, of which the cylinder heads are made, cools very quickly, giving off the heat rapidly and taking the same temperature as the surrounding atmosphere. The sheet of water in the water jacket around the cylinder is very thin, so it is soon brought to the same temperature as the walls of the jacket. I've noticed this water will freeze when a pail of water in the shed will not have even an ice film. One night I relied on the weather prediction in the newspaper. The weather was going to moderate, and I neglected to drain off the water, as I didn't believe it would turn cold enough to freeze that water film. Well, it did, and the result was a badly cracked cylin-

der and a badly spoiled temper.

"There was delay—tractor service then wasn't what it is now. I had the pleasure of waiting for my new cylinder. My belt work suffered in consequence. I had to do my wood sawing and other things by hand.

"That night, after the lamps were lighted, we went into executive session. I laid down these hard and fast rules, just as I'm laying them down for you. Here they are:

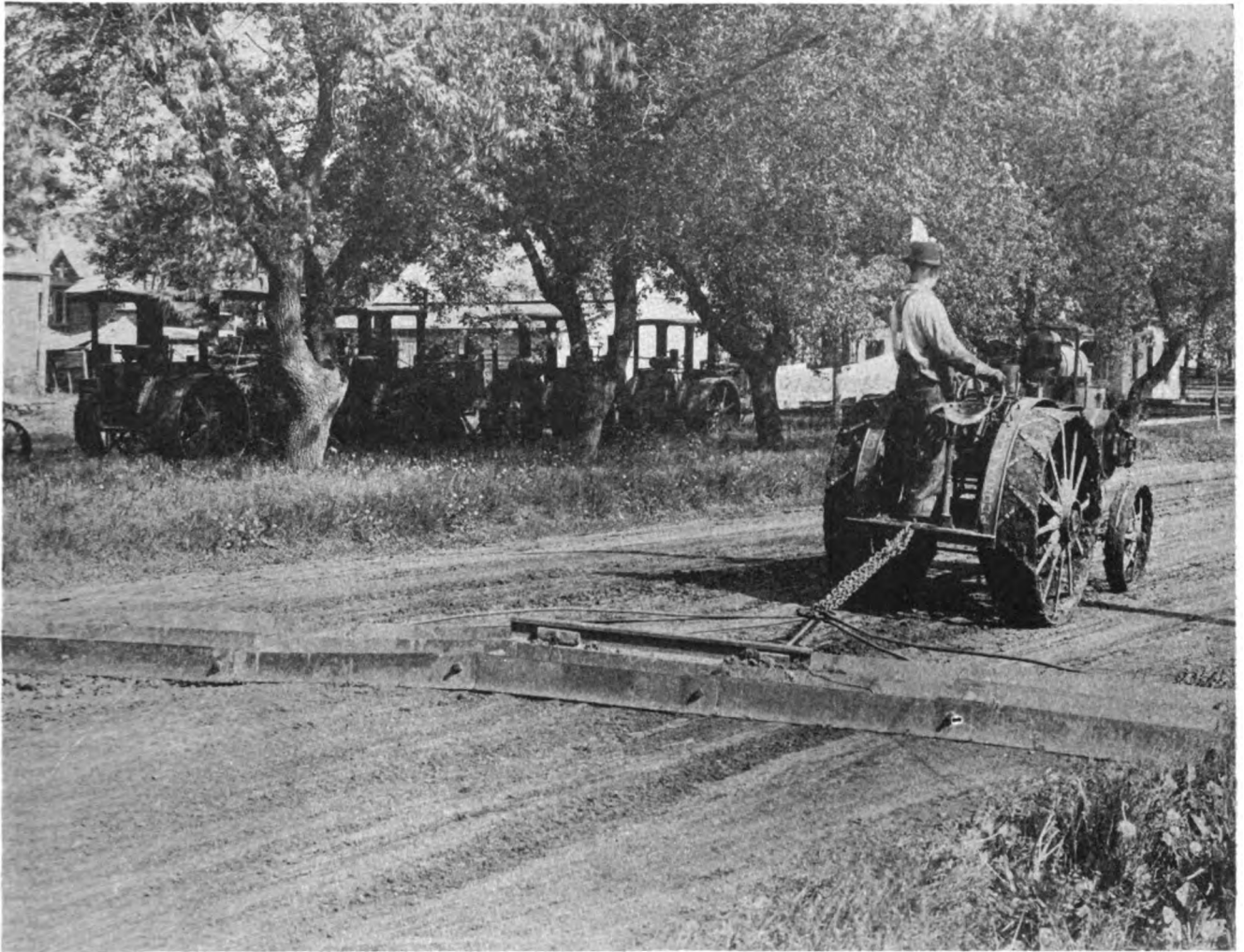
"In cold weather, when a tractor is left standing idle, if only for a few hours, drain it. If it is to be left for an indefinite winter period, drain it. Whenever you have finished using the tractor, altho the weather at the time may not be freezing, drain it—it may freeze.

"And here's how to drain the tractor: Open every drain cock and see to it that not only are all these cocks open, but that the water comes from them. Sometimes there may be a reason for a stoppage, even with an open drain cock.

"Another good thing is to leave the drain cocks open until ready to fill up the cooling system for another run. This is very important where the tractor is left in the open—which we trust it won't be. A rainfall can refill the cooling system, particularly if the system is of the hop-



A Tractor Can Be Used for All Kinds of Farm Work, Including Planting.



One of the Sources of Income of the Tractor Owner is Custom Work, Such as Hauling a Road Drag.

per-cooled, type. If the drain-cocks were closed and the weather should turn to freezing, there would be all sorts of damage.

"Poor lubrication in winter is a menace to the tractor. You know, as well as I do, that oil flows slowly in cold weather. Now you can readily see that when oil flows thru parts slowly, it cannot get to the proper centers in time to prevent wear and tear on bearings and pistons when the tractor is first started. It is practically running the tractor without oil, in such a case. Ever watch an old locomotive engineer on a frosty morning? You'll see him heat up his lubricating oil before applying it.

"Well, it's just what you, as a tractor operator, want to do. A little warm oil added to what happens to be in the lubricator already, will make the whole supply more easily handled by the automatic pump. It is a good thing, too, before starting the tractor in freezing weather, to turn the hand-crank of the oiler for sixty or seventy-five revolutions—gets her kind of limbered up and works enough oil into all the parts receiving oil. I call this treatment 'Tractor Old-Age Insurance.'

"Now, if oil gets to running slowly when it's cold, you can be sure that cup grease stiffens up a heap sight more."

"Why?" asked Hal, who had been willing to play the part of close listener.

"Easy enough," replied Eb. "It's the presence of water in the grease that causes the freezing, and when you have it mixed with a solid that gets cold, you have something pretty stiff. Cup greases hardened in that way need a lot of heat to limber them up fit for greasing parts of a machine. And unless the grease gets this heat treatment pretty soon after a tractor has been started, you are back to the old proposition of running your tractor without lubrication. The trick to do is to keep the grease cups not only filled with a good, light grease, but they should be screwed down several more turns at the start, when it's cold.

"All internal combustion engines, or those utilizing the expansive power of gases, are harder to start in cold weather than at another time. Any grade of fuel becomes less easily vaporized at the lower temperatures. The most aggravating difficulty of all comes from using a poor grade of gasoline for start-

ing the tractor. All farmers should learn that there are good and bad grades of gasoline in the market, and which grades to buy and which to avoid. By using a high grade of gasoline for priming, the starting troubles will be overcome.

"It's a good trick to dump a bucket or two of warm water into the hopper or cooling system of the tractor just before starting. The warm water in the water jacket raises the temperature of the cylinder to a point so that it does not have the same condensing and chilling effect on the vaporized gasoline that otherwise it would have. It will also save using so much fuel, for it takes a lot of the fuel just to heat the cold engine and water. In a kerosene tractor, which is still hot from a previous run, it is better to start on kerosene again than on gasoline; gasoline, however, is better to start with when the tractor is cold.

"In housing the tractor, it is best to store the machine in a dry place, preferably in a shed, or barn, as we do, whenever it is idle, if only for a few hours. I always oil it before leaving it stored. I overhaul it before taking it out of storage and I cover it with a tarpaulin sheet in the shed to keep out dampness."

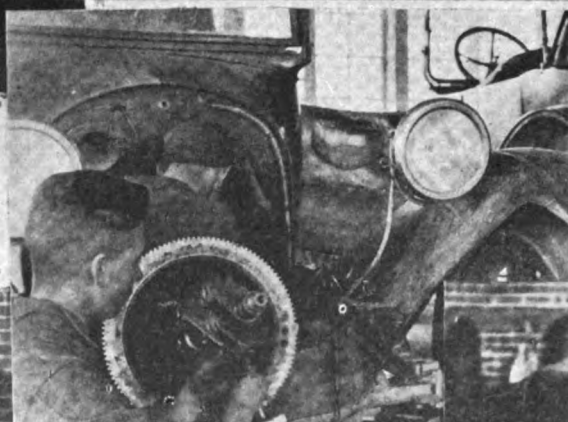
What the Farm Boy Learns to do



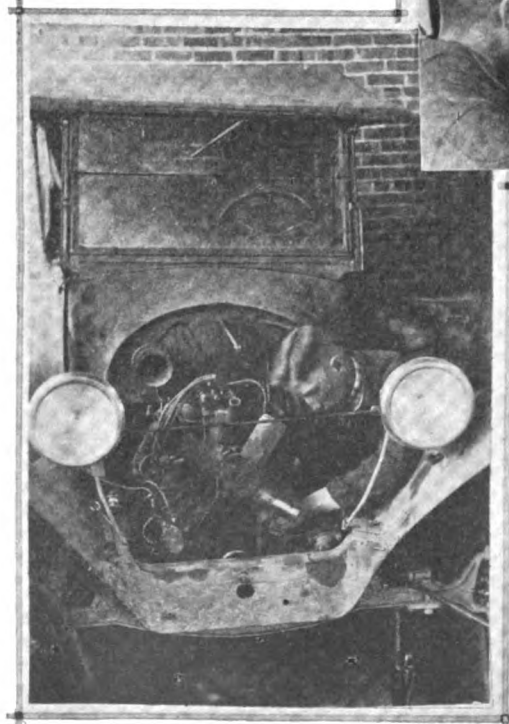
KNOTTY KNOTS THE BOYS TIE. Intricate but interesting is a phrase that describes the rope work the boys do in the agricultural high schools.



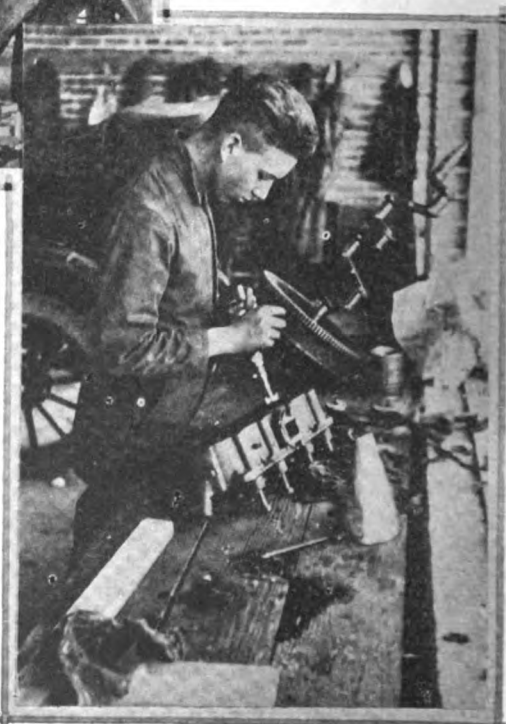
NOT SO DIFFICULT WHEN YOU LEARN HOW. Here we see a class in rope work in the Agricultural High School. These boys are learning how to tie different kinds of knots and how to make useful hitches that will come in handy when they are needed on the farm.



WHAT MAKES THE WHEELS GO ROUND? That's what the boys shown in the picture at the left are doing in the automobile mechanics' class work in the Agricultural High School. When their autos balk in the future they will run them into the farm shop and fix them up in no time.



GETTING THE ACTUAL EXPERIENCE. The pictures on either side are the two other views of the practical work the farm boys get at the Agricultural High Schools. At the right the boy is grinding the valves into the cylinders of an automobile engine. At the left the youth is repairing the ignition system. Every possible trouble that may happen to an automobile is encountered in the school work and the best methods of remedying them is taught.

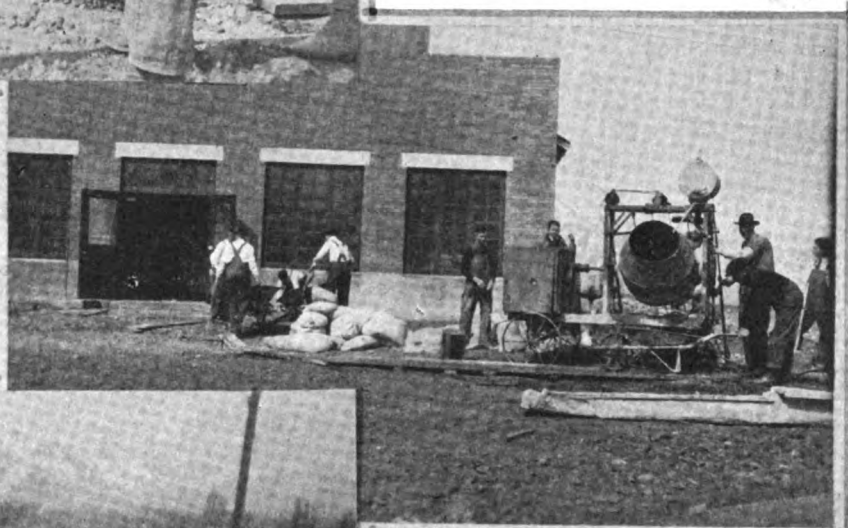


at the Agricultural High School



GETTING CONCRETE KNOWLEDGE ABOUT CONCRETE. Concrete is a valuable material about the farm and a knowledge of how to mix it and the proper way to lay is given the future farmers who attend the Agricultural High Schools. The four pictures on this page show the boys at the South Cache High School, Hyrum, Utah, laying concrete about the school building. At the left they are putting the concrete in the forms for a sidewalk and trowelling the surface.

LEARNING HOW TO USE A CONCRETE MIXER. Small concrete mixers are mighty useful pieces of farm equipment. Every season there is a piece of concrete work, large or small, that would make the farm better, and the mixer does a better job of mixing the aggregates and cement than can be done by hand.



MAKING A SMOOTH FINISH. One of the "tricks" of the concrete worker is getting a smooth finish, either on a walk or a feeding floor or any other piece of concrete work. In the picture to the left the youngsters are learning that art.

AN IMPORTANT JOB. Whether a piece of concrete work is good or bad depends a great deal on the foundation, or bed in which the concrete is laid. In the picture at the right the boys of an Agricultural High School are excavating and grading the bed for the concrete. A well-packed, properly drained bed is an essential of good concrete work.



Discing for Better Seedbeds

Comparatively New Type of Tillage Implement Works and Pulverizes the Soil, Making Plants Foods Available and Producing Bigger Crops

BY H. E. LINN

WHILE in relation to the age of agriculture itself the disc harrow is a comparatively new type of tillage implement, its development to its present-day form covering a period of approximately 25 years. Yet the disc harrow today is generally regarded as a universal tillage implement, suitable for use in practically all types of soils, and for preparing and finishing the seedbed for the growth of most of our field crops.

When properly used, the disc harrow will see more working days during the year on the average farm, than any other tillage implement. We say "when properly used" because while practically every farmer knows the value of the disc harrow in breaking up clods and finishing the seedbed after plowing, not all farmers realize that this implement can be used in many other ways, all of them conducive to bigger yields and more profitable farming.

In our study of tillage implements and their effect upon the soil, we must know something of the soil conditions most favorable to the growth of a crop. It is safe then to say that the implement that most closely approaches these ideal conditions, is the ideal tillage implement.

The three principal things required for plant growth are water, the elements

in the soil, and air. By far the most important of these is water, or soil moisture, demonstrated by the fact that from 300 to 500 tons of water are required to produce one ton of dry mat-

the moisture for the use of the crop thruout the season.

To do this, we must pulverize the soil, and thus increase its moisture-holding surface. The more the soil is



Discing Fallow Ground to Destroy the Weeds and to Make a Mulch to Prevent Loss of Valuable Moisture.

ter. We cannot produce rainfall, but we can conserve moisture thru proper tillage, and prevent evaporation. By tillage we can actually increase the water holding capacity of the soil, and store

pulverized, the more water it will absorb, just as a fine grain sponge holds more than one of coarse grain.

The ideal seedbed is deep, fine and well pulverized from top to bottom. The plant roots draw their supply of plant food from the soil particles, and it is therefore evident that there is more plant food available for the use of roots when the soil is well pulverized into particles, than when it is left in chunks or clods, as the roots will come into contact with more soil particles. The soil must be thorly stirred, mixed and pulverized to provide this condition.

There is no other implement that has the same churning, mixing and pulverizing action of the disc. The plow is the primary tillage implement, of course, but it merely turns over the furrow. The spike tooth harrow cuts thru the top surface, but provides no mixing motion. The spring tooth harrow digs in, drags clods to the surface and by rolling them over and over pulverizes them to a certain extent, but its use is limited to a few types of soils. The corrugated roller is an excellent tool so far as finishing the seedbed and pulverizing the surface is concerned, but it does not penetrate and stir and mix the soil.

The disc harrow penetrates the soil to a depth of from two to five inches, depending upon soil conditions and the



Cross Section of a Furrow in a Field of Corn Stubble that Had Been Disced Before it Was Plowed. Note the fine soil at the bottom of the furrow, while the trash and stubble was cut up and buried.



Discing, Seeding and Rolling All In One Operation. This method is a time saver and permits the tractor operator to do the work of several men.

angle at which the disc gangs are set. The double disc, with its two sets of gangs, the front set cutting the soil and throwing it out, the rear set pulverizing it and turning it back, leave the ground level and conserves moisture.

Discing Before Plowing is Profitable

Moisture is stored in the sub-soil and rises by capillary attraction to feed the plant roots. The seed-bed, therefore, must be deep, compact and well pulverized from top to bottom, with no air

spaces or clods to break up capillary attraction. To put the ground in the best possible condition for seeding, it should be disc'd before and after plowing.

Discing before plowing makes a layer of fine, loose soil on top of the ground from two to four inches deep. When plowing is done this fine soil is turned under and deposited at the bottom of the furrow, giving good contact with the sub-soil, filling up air spaces left where the furrows lapped, and making it easy for moisture to be brought up to the crop roots. A good discing then finishes

the job by pulverizing the clods, and compacting the soil.

Conserving Moisture

In sections where rainfall is not abundant, conservation of the water already in the soil is vital to the success of the next crop. Scientific experiments have shown that on uncultivated land 200 tons of moisture per acre per month escape from the ground from May to July. From July to September 400 tons per acre per month escape. This, of course, varies in different localities.



The Double Disc Works the Ground Twice in One Operation. The front set of discs cuts the soil and throws it out. The rear set pulverizes it and turns it back, leaving the ground level and covered with a fine mulch.



Discing Sod, Which Contains a Large Amount of Plant Food Is Recommended. After it has been disced it is plowed under and is in condition to decay more rapidly and become available as food for growing crops.

Uncultivated land in a hot and dry season becomes sunbaked and large cracks appear, thru which the moisture in the sub-soil evaporates. That moisture, not lost by evaporation is taken up by the weeds. Now the use of the double disc on ground of this kind kills weeds, make a fine mulch on top of the ground, which checks evaporation, and permits any rainfall available to enter easily for storage in the sub-soil. If the ground is hard the rainfall drains off and is lost.

Discing Sod

A heavy sod contains a large amount of plant food. In order to hasten the decay of the sod, discing before plowing

will cut it up three to four inches deep, and mix it with the top layer of soil. When turned under water, air and soil elements can easily reach every particle, thus soon reducing this humus to plant food.

Weeds, straw, manure, corn stalks, etc., can as in the case of sod be cut and mixed with the top soil most efficiently by the double disc harrow.

Preparing Seed-bed for Wheat and Oats

It has been found that some plants require a shallow, firm seed-bed rather than a deep, loose one, and that greater yields are gotten by discing corn stubble

in the fall for wheat, and in the spring for oats instead of plowing.

The Ohio Experimental Station Bulletin 257 gives for a four-year average 61.99 bushels of oats on disced ground and 58.65 bushels on plowed ground.

In addition to this extra yield two-thirds of the cost of planting the oats was saved, by using a double disc harrow.

Following the Binder

In the wheat belt where clover is not grown in the wheat or small grains it is an excellent practice to follow the binder with a disc harrow.

The Kansas State Bulletin 26 states that by discing wheat stubble at harvest the next year's crop was increased 4.5 bushels and giving the following advantages for this practice:

1. Forms a dust mulch, thereby conserving moisture by the prevention of evaporation.
2. Allows the rain to enter the soil and be stored instead of running off, as would be the case if a crust were on the surface.
3. Destroys weeds and causes weed seeds to sprout, which are easily killed by subsequent discing or harrowing with a spike tooth.
4. Decreases the draft of the plow by breaking up the top crust and, as stated before, mixes all the trash with the top soil, thus hastening the decay of this potential plant food.

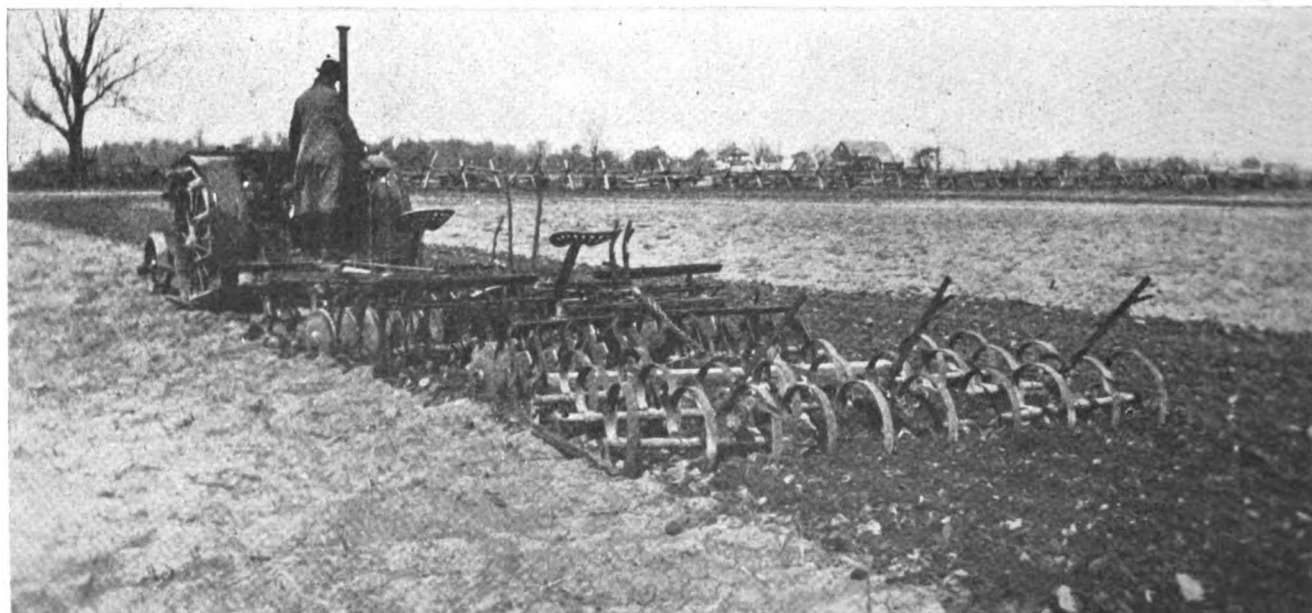
Covering Broad-casted Seed

In some sections seed is broad-casted on the ground without any preparation and is covered by a double disc harrow. While perhaps this is not good farming practice, as an emergency the crop can be quickly sown. No tool other than the double disc harrow can so efficiently cover each grain.

Working in Lime

The presence of lime in soil is essen-

(Continued to page 46.)



Discing and Harrowing with a Spring Tooth Harrow. This method cuts and pulverizes the soil and the spring tooth harrow gives it an extra stirring.

How to Build a Radio Set

Outfit That Will Receive Messages from as Far as 1,000 Miles Can Be Constructed at Small Cost by Following the Directions Given in This, and Preceding Articles by Mr. Carr

By A. H. CARR

[EDITOR'S NOTE—This is the third of a series of articles that describe in detail how to build a long distance Radio receiving set. Mr. Carr, the author, is an amateur wireless "fan," and constructed the set he here describes for his own use. It has proved very satisfactory, he having heard distinctly concerts given more than 1,000 miles away. The first two of these articles appeared in the October and November issues. These three articles give complete directions for building the radio set. The next article will deal with its operation.]

WITH the tuner we have already described there is used a separate detector cabinet in which the detector and amplifier bulbs and their controls are housed. The cabinet itself is made exactly like the tuner cabinet and of the same dimensions. It should be stained to match the tuner cabinet.

The Detector Panel

The detector panel should be of the same material as the tuner panel. For the best results bakelite or some similar insulating material should be used, but a thin, dry, wooden board will answer the purpose. When a board is used for a panel (especially if this board is varnished or stained) all the binding posts and other metal parts which are in any way connected with an electric current should be well insulated from the panel. The best way to do this is by cutting washers from dry cardboard and placing one on each side of the panel where the

metal parts go thru. These washers can be cut just to fit the metal part and in this way the metal is held away from the varnished wood and at the same time the cardboard does not mar the appearance of the panel. To further insulate these parts wind silk sewing thread around all pieces which go thru the panels, completely covering the metal so it cannot touch the wood.

There is nothing complicated or hard about making the detector panel and nothing more need be said about it as all that is necessary is to mark off the material and drill the holes as shown in Figure 10.

The three clusters of holes near the top of the panel (shown seven in a group) may be omitted as they are not at all essential. They are there to beautify the instrument and to be used as peepholes thru which the brightness of the lamps may be watched. The brightness of the lamps can be watched just as well by raising the lid. However, when neatly countersunk, these holes help the appearance of the set greatly.

The Base

A shelf made of a thin board about 17 inches long and 5½ inches wide should be fastened to the back of the panel so it will just slide into the cabinet and rest flat on the bottom when the panel is fitted into place.

Assembling the Panel Parts

Figure 11 shows the panel and base both as if they were knocked down flat.

This makes a very simple wiring diagram possible.

Three rheostats, having a capacity of 1½ amperes and a resistance of about 6 ohms, should be arranged as shown. Probably a few extra holes will have to be drilled in the panel to receive the bolts which are to hold these in place. The rheostats are for controlling the brightness of the bulbs.

Two 5-spring and one 3-spring filament control jacks are attached to the panel as shown. Before putting these in place the little connecting ends should be bent out in fanlike shape as shown, in order to make the soldering of connections easier.

If you are not handy with a soldering iron, you might find it a little hard to solder wires to these jacks after they are fastened into place. A good stunt to overcome this difficulty is to solder a short piece of No. 14 bare copper wire to each of the little prongs of the jacks before fastening the jacks into place. These pieces of wire can be left projecting about two inches, spread out in fanlike shape. This allows ample room for soldering the connecting wires in place.

Another little stunt to make it easier for the fellow who doesn't happen to be handy with the soldering iron is to take the jack apart before soldering the short pieces of wire to its prongs. But, by all means, before taking the jack apart make a very accurate drawing of it or you will forget how it was put together. Take

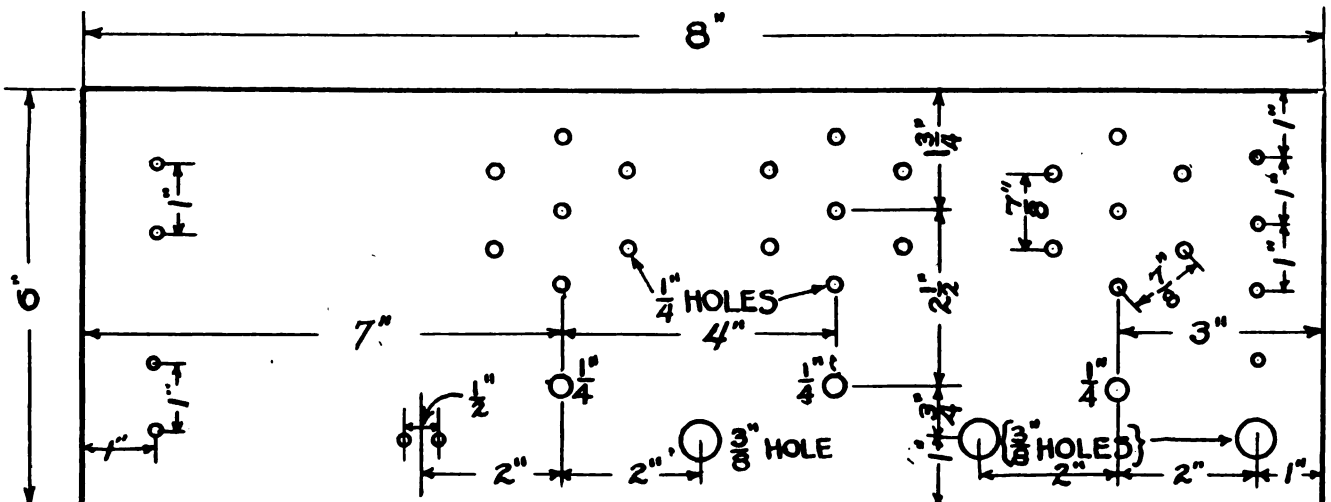


FIG. 10 Detector Panel

Drawing Showing the Location of the Holes and Their Sizes That Are to Be Bored in the Detector Panel.

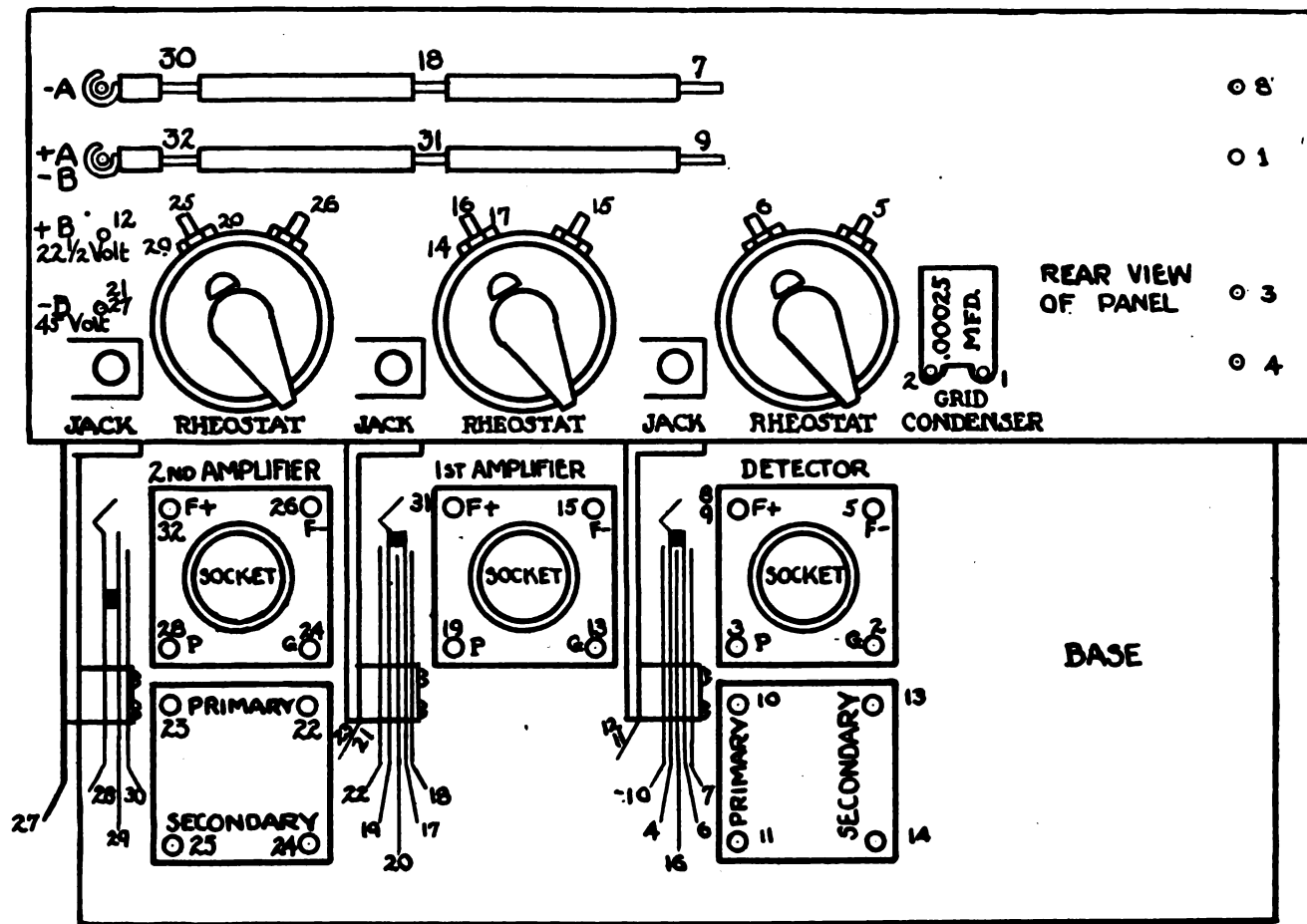


FIG 11 Wiring Diagram.

Diagram Showing How the Wires Are to Be connected by Attaching Each Numbered Wire to That Having a Similar Number.

the top spring of the jack and after scraping the prong and one of the short pieces of wire real clean bind the piece of wire to the prong with about three turns of No. 26 bare copper wire. This will hold the pieces together while they are being soldered. As each part is soldered slip it into place, building up the jack as you go, but being sure that the wires do not touch each other.

If you should tear the small pieces of waxed tubing which surround the little bolts holding the springs together you can roll strips of paper around the bolts in place of the waxed tubing.

A grid condenser of .00025 mfd. capacity is arranged as shown.

An adjustable grid leak can be bought to fit the condenser or it can be made. The making of this part is very simple as all that is necessary is to cut a piece of thick, dry cardboard to the size and shape shown in Figure 12. The leak is made by drawing a lead pencil mark between the two holes. Two 3/32-inch brass bolts are pushed thru the holes so the heads fit up tight against the ends of the pencil mark. The same bolts hold the condenser in place. The grid leak is adjusted by erasing part of the pencil line or putting on more.

Eight nickel plated binding posts complete the parts to be assembled on the panel.

Assembling the Parts on the Base

Three tube sockets are arranged on the base so the markings on their binding posts appear in exactly the order shown.

Two transformers may be placed in any handy space as all that is necessary is that they should not both point in the same direction.

In buying the transformers the constructor can use his own judgment as to the ratio between the primary and secondary windings. The higher the ratio the louder the signals, but if too high a ratio is used on No. 2 the signals may be somewhat distorted. About the best arrangement is a 10 to 1 transformer for No. 1 and a 5 to 1 for No. 2.

Wiring the Parts

The wiring of a detector cabinet is generally the hardest and most complicated part about making a radio set, but with the simple arrangement in Figure 11 it is made one of the easiest tasks of all. For the wiring ½ pound of No.

18 insulated copper bell wire will have to be obtained.

To begin with, two pieces of this wire must be attached to the binding posts in the upper left hand corner of the panel, after having scraped the insulation from small sections as shown.

Now you will find that there are 32 sets of numbers (two numbers to a set). Each number represents a point where a connection must be made. If one point has two numbers, that simply means that there are to be two wires connected to that point.

The surest way is to take the gummed flap of an unused envelope and cut the glue covered portion into 64 small squares and after dividing them into pairs number each pair with numbers from 1 up to 32. Number all connecting points exactly as shown in Figure 11 by pasting these stickers beside them.

All that remains to be done is to cut 32 pieces of different lengths from the No. 18 copper bell wire and, after removing the insulation from small portions on each end, connect all like numbers. Begin by connecting No. 1 to No. 1, No. 2 to No. 2 and so on. If a single point has two numbers beside it as in the case of the post labeled

"Red Baby"



A Practical Reminder For Everyday Farmers

You know your farm like a book. Whether it covers 80 acres or 320 acres, you are perfectly familiar with every corner of every field. You know the lay and contents of the buildings that make up your homestead. With your eyes shut you can tally the livestock and all the items of farm equipment. To be well posted on these things is a matter of pride with you and a matter of careful management besides.

This policy could well be carried a step further. Profitable, economical farming is so largely a matter of modern, improved machines that every good farmer should keep posted also on the equipment on the market so that when occasion arises he may invest to the very best advantage by the purchase of new machines.

We are therefore printing here for your information the list of standard, reliable, most popular farm equipment—

THE McCORMICK-DEERING LINE OF FARM OPERATING EQUIPMENT

Grain Binders	Corn Pickers	Spring-Tooth Harrows
Threshers	Corn Shellers	Peg-Tooth Harrows
Harvester-Threshers	Ensilage Cutters	Tractor Harrows
Headers	Huskers and Shredders	One-Horse Cultivators
Push Binders	Huskers and Silo Fillers	Culti-Packers
Mowers	Beet Seeders	Kerosene Engine
Hay Rakes	Beet Cultivators	Tractors
Tedders	Beet Pullers	Motor Trucks
Hay Loaders	Cotton Planters	Cream Separators
Sweeps, Rakes and Stackers	Grain Drills	Manure Spreaders
Side Rakes and Tedders	Lime Sowers	Stalk Cutters
Baling Presses	Broadcast Seeders	Feed Grinders
Corn Planters	Tractor Plows	Stone Burr Mills
Listers	Walking Plows	Cane Mills
Corn Cultivators	Riding Plows	Potato Diggers
Corn Binders	Disk Harrows	Wagons
		Twine

This equipment is always available for you at the store of the McCormick-Deering dealer. In the list are many items for farming in winter—such as engines, various belt power machines, cream separators, motor trucks, etc. Make the McCormick-Deering dealer's store your headquarters. Use the service for which his establishment is famous. Write us direct for information on any of the above machines.

INTERNATIONAL HARVESTER COMPANY

Chicago

of America
(Incorporated)

U S A

93 • BRANCH • HOUSES • AND • 15,000 • DEALERS • IN • THE • UNITED • STATES

8 and 9, simply connect two wires to this point and run one to No. 8 and the other to No. 9, or whatever numbers are shown.

All connections made to points other than binding posts should be securely soldered.

The "A" Battery

For lighting the filaments in the tubes a six-volt battery will be needed. An automobile storage battery will do. It should be attached to the instrument as shown in Figure 13.

The Detector "B" Battery

A high voltage battery, commonly called a "B" battery, is attached to the set as shown in Figure 13. This battery should have a total voltage of $22\frac{1}{2}$ and should be provided with means for tapping in at a lower voltage if desired. This battery should have the taps at lower voltages because different detector tubes will be found to work better at different voltages between 18 and $22\frac{1}{2}$, and until you have experimented with your detector you don't know at what voltage it will work best.

The Amplifier "B" Battery

For the amplifier a "B" battery of 45 volts is used, connected as shown in Figure 13. To make the signals still louder a voltage up to 70 can be used for the amplifiers but the connection shown furnishes all the voltage necessary.

Lightning Protection

It is advisable to have a heavy knife switch placed outside a window in an easily accessible place. This switch should be mounted in a vertical position and connected as shown in Figure 14. When the instrument is in use the switch should be thrown into the position shown in Figure 14, but at all times when the set is not in use the lever should be thrown over and pressed down, thus grounding the aerial outside the building.

It is also advisable to equip an aerial with a patented lightning arrester. These various contrivances are furnished with directions for installing so space will not be taken here to explain their installation.

Solder All Connections

Remember, if you want your radio set to work, solder each and every connection which is not made to a binding post or binding screw. Do not, under any conditions, fail to do this.

Also before making each connection, whether it is to be soldered or not, scrape the ends of wire or other parts which are to be connected real clean before making the connection; and make each connection real firm and rigid or

you will have a set which will not work and you will be wondering what is wrong with it.

Selecting Parts

A few words should be said concerning the selecting and buying of the parts which cannot be made by hand. For in this way the inexperienced constructor can be given advantage of the experience of others.

First of all and above all things be **PENCIL MARK**

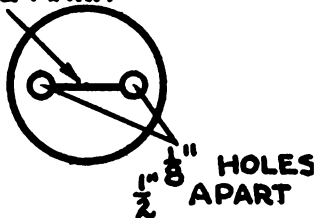


FIG.12 Grid Leak

Diagram Showing How to Construct the Grid Leak.

very particular about what kind of phones you buy. The phones you must remember, are the very life of a set and much depends upon the sensitiveness of them. They should have two earpieces so as to exclude all interfering noises and they should be about 3000 ohms resistance. Such sets are advertised as supersensitive, meaning extra sensitive, and retail at about \$6 and up.

A plug will have to be purchased to fit the jacks used. This plug clamps the tips of the receiver cords and makes it possible to "plug in" on one, two or three bulbs. The bulbs which are not in use are automatically switched off by the jacks and thereby current is saved.

When plugging in on one bulb after using two or three always dim the lights slightly by turning the rheostats so that the one bulb will not be injured by receiving too much current.

The six volt "A" battery or filament lighting battery should be of a standard make and should have a capacity of at least 80 amperes or more. The greater

the capacity the better, as it will not run down so often. This battery should never be allowed to run down so that it will not operate at least two bulbs.

Some provision will have to be made for having this battery recharged and the recharging of this battery practically constitutes the operating expense of the set.

The high voltage or "B" batteries should be of a standard make and they use so little current that they will function properly for months without having to be replaced.

How to Use the Set

If you find that your set has something wrong with it do not feel discouraged, because we will get around to your assistance in our next issue of this article. Space in this issue will be limited to those who are correct in all their construction from the very first as it would not be fair to hold back the enjoyment and pleasure from those who have their sets all ready while we go "trouble shooting" for a few days.

FARM MECHANICS has undertaken to place the enjoyment of radio within the grasp of those of its readers who cannot afford to pay a high price for a factory made receiving set. This is a great service which cannot be fully appreciated by its readers until they begin receiving concerts, news, weather reports, etc., right in their own homes.

It is the writer's desire that not a single person who carefully builds this set should be disappointed so a scheme will be given in the next issue by which anyone who has made a mistake in wiring can check over his work in search of his own error.

After a broadcasting station has been heard a few times it is not hard for the operator to tune in this station again because he can remember just about how his controls were set.

In tuning, first plug in the phones then turn the rheostats slowly until the bulbs burn brightly, but not dazzlingly so.

Then turn your attention to the tuner. First try the switch on the lowest point,

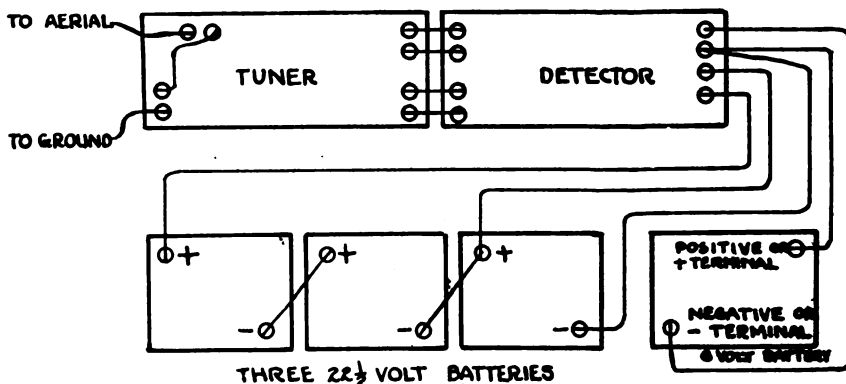
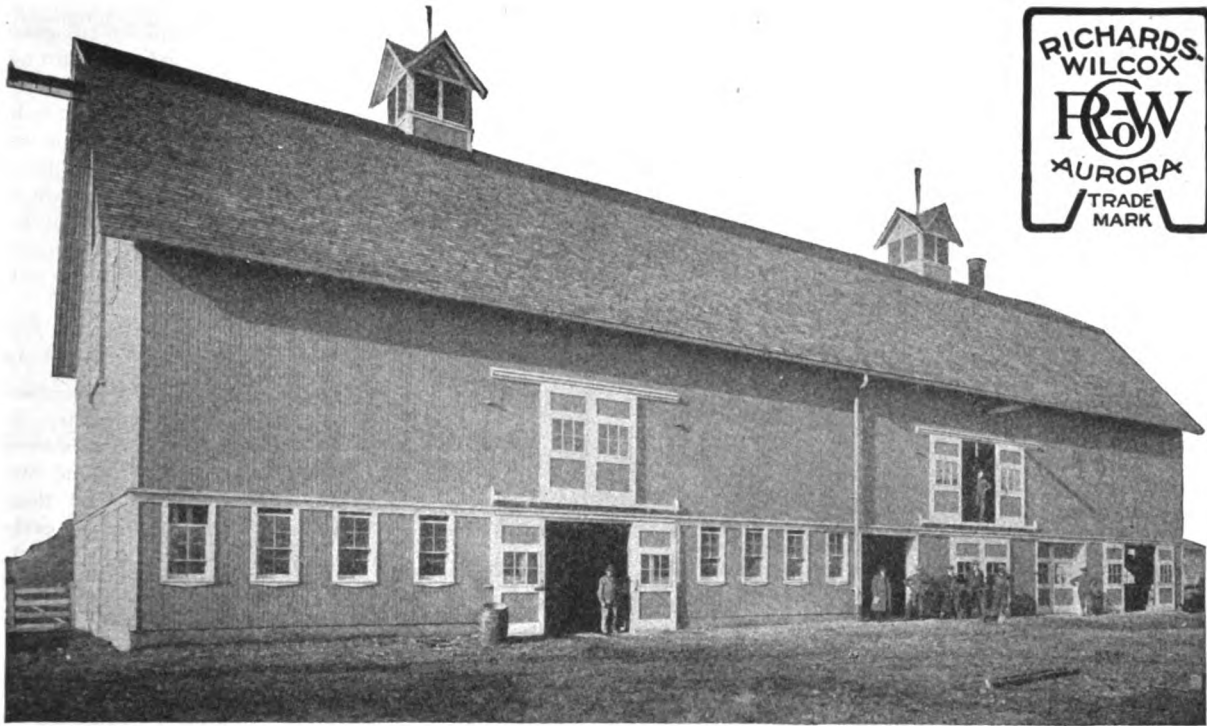


FIG.13 Connecting the Set

Showing How the Batteries Are Connected Up.



How to Select Your Barn Door Hangers



More than twelve thousand hardware and lumber merchants in the United States and Canada sell **Richards-Wilcox Barn Door Hangers**. Before buying, see these hangers at your dealer's. Compare the type of hanger you had in mind with the **R-W** hanger of similar type. We leave the rest to your mechanical judgment.

Richards-Wilcox Barn Door Hangers are made in various styles for every need. All are smooth-running, strong and exceptionally durable. If you have read the descriptions of notable farms appearing in "Farm Mechanics," you will be interested in knowing that all the barns on the farms so far described were equipped with **R-W** hangers.

If you are planning to build or remodel be sure to send for our new booklet, "Hardware for the Farm and Home." Contains much information you will want to have.

Richards-Wilcox Mfg. Co.

"A Hanger for any Door that Slides."

AURORA, ILLINOIS, U.S.A.

Minneapolis
Boston
Philadelphia

Chicago
Boston
Winnipeg

New York
St. Louis
LONDON, ONT.

Cleveland
Indianapolis
Montreal

Los Angeles
San Francisco

RICHARDS-WILCOX CANADIAN CO. LTD.
LONDON, ONT. Montreal

Slidetite

Manufactured by Richards-Wilcox, is the original sliding-folding garage door hardware.



Quality leaves its imprint

Slidetite

Is the most widely imitated garage door hardware. "Imitation is the sincerest form of flattery."

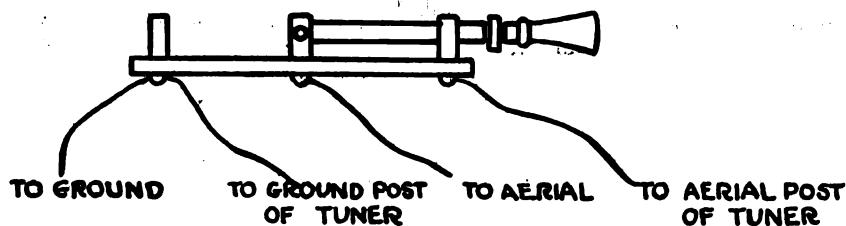


FIG. 14. Ground Switch

Lightning Switch and Arrester with Which All Radio Sets Should Be Equipped.

manipulating the condenser back and forth. Also try varying the variocoupler and the variometers but do not turn them clear round as this would twist off the connecting wires. They are designed to make only a quarter turn each way then back. Most messages are received with the variocoupler and variometer rotors almost straight in line with their stators and not crosswise.

If no sound is received try the switch on the next point and repeat the manipulation of the controls, and so on.

Another thing which adds to the difficulty of tuning for the first time is the adjustment of the grid leak. However, once this is properly adjusted there is little need of tampering with it again. As you tune for a station slowly erase part of the pencil mark, then slowly add to it. Once the message is received it is an easy matter to tell whether the mark should be heavier or lighter by noting the effect of adding to it or erasing part of it.

Caution

In connecting your batteries to the set the first time be very careful you do not get the "B" battery and "A" battery connections turned round, for if you do your bulbs will surely be destroyed.

A good way to avoid this danger is to connect only the "A" battery to the set as shown and leave the "B" battery disconnected. Turn all the rheostats off

and plug in the phones on the last amplifier. Now when the rheostats are turned on the bulbs should burn indicating that the "A" battery is properly connected.

Then the "B" battery can be connected. But before attaching this battery see that no two wires are touching each other.



Discing for Better Seedbeds

(Continued from page 40.)

tial for the growth of plants. Where soils are said to become sour lime must be added. This must be done after plowing. The lime is spread on the plowed ground then disced in, thoroly mixing it with the soil in which the seed will be planted.

Improvement of Light Soils

One of the best ways to improve light soils is by the addition of humus, such as straw, manure, or a cover crop. Discing then is a wonderful help, by chopping this plant matter up and mixing it with the sand in light soil.

Reclaiming a Marsh

The first step after draining a marsh is to level down the "bogs" or tufts of sod and cut up the marsh grass and weeds—a job at which the automatic disc harrow is excellent.

Draining or Eliminating Surplus Water

Where a soil is damp and cold a double disc can be used to an advantage. By discing this ground, turning and aerating it, the sun and air get a chance to work and in a short time it will be a dry, warm seed-bed. Notice the fields in the spring, and how quickly the disced portion dries out as compared to the undisced portion. Seed placed in cold ground will rot, while seed placed in disced ground that is dried out will sprout and grow.

Rejuvenation of Pasture Land

One of the best ways to rejuvenate a worn-out pasture, which perhaps is sour in addition to being infested with weeds, is to apply a coat of lime and fertilizer—sow new grass seed and then disc thoroly. If this is done in early fall the grass seed will get well started, then produce a cover crop, which will prevent washing or erosion.



RABBIT stew and unchewed apple trees go hand in hand.



A PROBLEM in arithmetic. If a quail eats 116 species of insects—mostly harmful—and 60 species of weed seed, is he worth more as a roast for the dinner table or roaming at large through your fields?



NO farmer is really successful who thinks more of his barn than of his home.



THE road to tractor information is one long highway of study—without any shortcuts.



SHAKING the wrinkles out of clothes while they are wet and before hanging them on the line and folding them neatly when taking them down saves times in ironing, one housewife finds.



THE prompt application of cold water hardens hot grease spilled on the floor and keeps it from going into the wood. Then it's easy to scrape it off and remove the stain with a wet cloth sprinkled with washing soda.



EARLY hatched spring pullets are beginning to lay. Handle them carefully and provide clean nests and fresh litter for them to scratch in. Proper care increases egg production.



Discing To Make a Mulch To Prevent Moisture from Escaping from Land That Had Dried, Shrank and Cracked After a Heavy Rain.

Lowest in History

WILLYS LIGHT REDUCED TO

\$275⁰⁰

Complete with Batteries

=and a Year to Pay for Certified Electric Service

Record breaking sales clearly show agriculture's emphatic acceptance of Willys Light as the leader of all power and light plants.

A firm belief in the continuance of this popular demand, makes possible greater volume and materially lower production costs. Effective December 1, 1922, we enthusiastically announce:—

Marked Reductions in All Prices

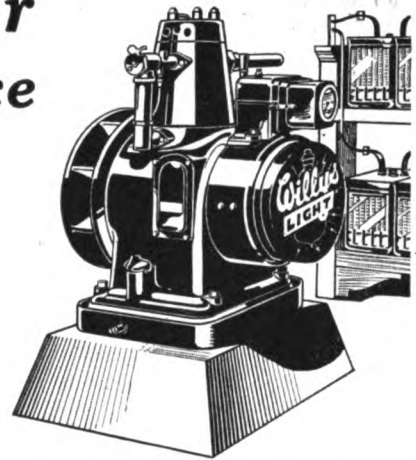
This amazingly low price of \$275 complete, and the easy terms upon which it can be purchased, clearly stamps WILLYS LIGHT "America's greatest gift to agriculture."

There is a Willys Light dealer right in your immediate vicinity, prepared to explain our prices, easy terms and complete facts that will save you money. Send coupon below for detailed information.

Desirable Dealer Territory Available.

WILLYS LIGHT DIVISION
The Electric Auto-Lite Company
Toledo, Ohio

Builders of over 3,000,000 electric lighting systems



The above pictures Willys Light, Model L-2, with the world-renowned Knight Sleeve-Valve Engine. An engine that wears in—not out—that improves with use. Capacity 1250 watts. New reduced price \$465. Before you consider any plant you owe it to yourself to get the Willys Light proposition. Mail coupon today.

WILLYS LIGHT

Power and Light with the Quiet Knight

WILLYS LIGHT DIVISION
The Electric Auto-Lite Company
Toledo, Ohio

Send without obligation complete information on Willys Light Certified Electric Service, new reduced prices and easy terms.

Name.....

Address..... F.M.

Save Your "Million-Dollar" Wife

A Comparatively Small Sum Spent for Plumbing Will Eliminate Back-Breaking Water Carrying to the Farm Home Where There is Electricity

BY F. J. ST. JOHN

A HALF-INCH pipe, long enough to reach from the well to the kitchen will carry more water into the house in a day than a woman can carry in, in a bucket, in two days' time.

A few dollars worth of piping would do the job of carrying water that many a man expects his wife to do—a wife that he wouldn't take a million dollars for.

What sort of business do you think that is, to let a million-dollar wife do the work that could be done better, at the expense of a few dollars' worth of plumbing? It doesn't answer the question to say that her mother or her grandmother got along very well in the same way.

Maybe they did. But they were using the best means they had, in those days. And they ran risks, in carrying all the barrels of water they needed into the house, of breaking precious arms and legs—and of contracting dangerous colds as they hurried thru a January storm with a scant shoulder-shawl folded three-cornered and thrown over their heads for protection.

It isn't necessary to ask our women-folks to run such risks today, when running water and other modern conveniences can be called on to serve them and save their lives and limbs.



Wives and Mothers Are Too Valuable to Have Their Health Endangered by Lugging Water.

And have you noticed—the most of our modern conveniences today are brought into the home thru pipes or over an electric wire. Electricity for light, heat and refrigeration, comes in over the electric wire. Water for household use comes in thru pipes.

The other day I sat in a city office building that was steam-heated, altho there was no heating plant, no fire at all in that building. The steam that heated it was produced, a by-product of some industry, in a building many blocks away and piped, underground, to this building where I sat. In the country we cannot get our heating like that—yet, thru a pipe, except in those favored regions where farm homes can enjoy the convenience of natural gas. But there are a lot of modern conveniences that can be brought into country homes in the modern way—over a wire or thru a pipe, and a lot of people are falling in line and putting electricity or some mechanical device to work in place of precious human strength and effort.

Even our conversation, neighborhood news, comes in over the party telephone line. We used to have to go visiting or to town on Saturday afternoon if we wanted to know the latest happenings and keep up with the neighbors on what was what. Now we can get it all, seated comfortably at the telephone, joining in or "listening in," whichever seems to promise the most interesting brand of information.

We might step aside just here to talk about the attractive features of radio, which so many are enjoying nowadays. But this is really a wireless development, despite the aerial, ground wires and so on which must be employed, and we want to keep this strictly to the discussion of the everyday, modern, practical conveniences which come into the farm home via pipe or wire and bring ease, comfort, labor-saving, safety and convenience with their coming.

Electricity forms the basis of all the modern home conveniences which are universally possible—available to every community on the globe. For there is no spot on this earth which may not have its electric plant to furnish electricity that may run in over its wire and bring all the blessings that electricity furnishes anywhere. Perhaps I've already told you, in these columns, that the arctic explorer, Amundsen, now frozen in, with his ship, the "Maud," away up toward the North Pole, has an electric plant on that ship, to energize his radio battery and keep him in touch with the outside world. Arctic cold has no terrors for an electric outfit such as he is using. Thru its aid he is kept in touch with the outside world and the world with him. Incidentally, this is

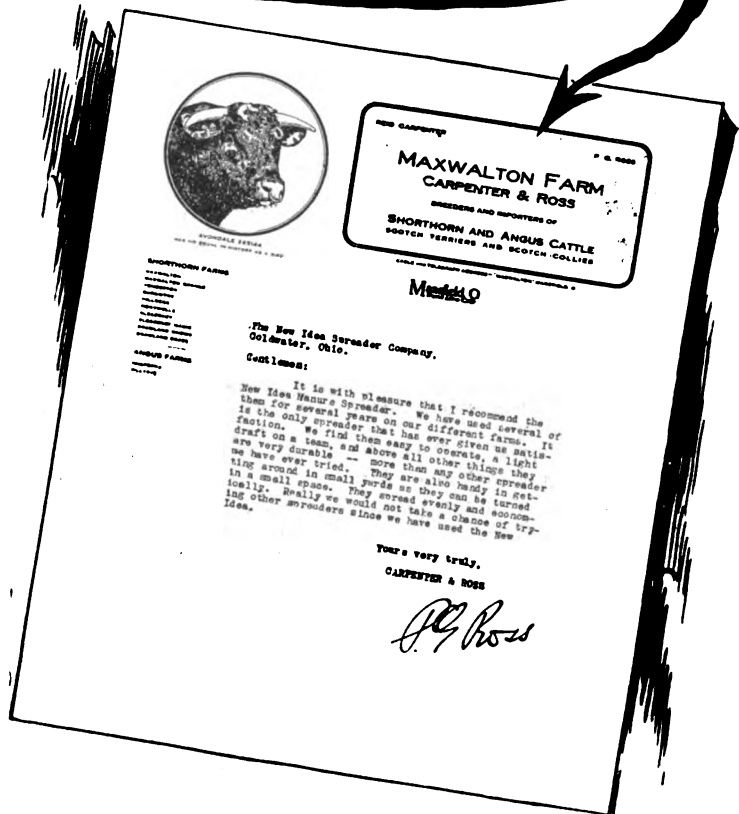


Electricity in the Farm Home Brings All the Household Conveniences as Well as Light. Operating a vacuum sweeper is easy compared with wielding a broom.

When Such Men as These Use NISCO Spreaders

Some of the Big Breeders who use NISCO Spreaders

Carpenter & Ross - - - Mansfield, Ohio
 Cloverleaf Stock Farm, W. C. Rosenberger & Sons, Tiffin, Ohio
 John O. Pew & Son - - - Ravenna, Ohio
 The Ona Co. - - - Chardon, Ohio
 Osborne Farm - - - Willoughby, Ohio
 Loeb Farm - - - Charlevoix, Mich.
 George McKerrow & Sons, So. Pawaukee, Wis.
 Heard's Dairyman Farm - Ft. Atkinson, Wis.
 Carnation Stock Farm - Oconomowoc, Wis.
 Gov. Frank O. Lowden - - - Oregon, Ill.
 Fenner Stock Farms - - - Decatur, Ind.
 O. Harris & Sons - - - Harris, Mo.
 Pickering Farms - - - Belton, Mo.
 101 Ranch, Miller Bros. - - - Bliss, Okla.
 Wheatfield Farms - - - LaSalle, N. Y.
 Donald Woodward - - - LeRoy, N. Y.



WHEN such prominent breeders as Carpenter & Ross, Donald Woodward, the owners of the famous Pickering Farms and scores of other big livestock breeders use the Nisco and New Idea in preference to any other Spreader—you accept this as just another link in the chain of evidence that establishes the undeniable supremacy of this “Original Wide Spreading Spreader.”

The New Idea Spreader Co. Coldwater, Ohio
 “Spreader Specialists”

You'll be particularly interested in the new B-3 model New Idea—a standard New Idea outfit in a most popular size. Its remarkably low price makes it the biggest-value buy in the Spreader field.

USE THE COUPON TODAY!

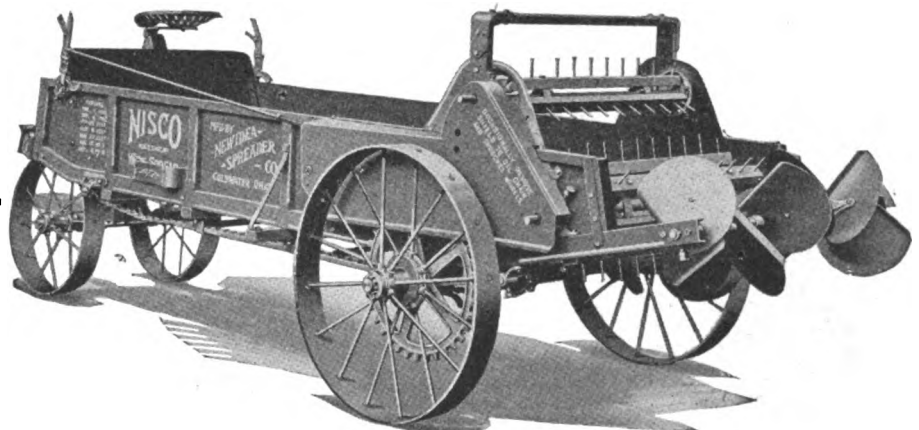
The New Idea Spreader Company
 Coldwater, Ohio

Gentlemen—

Please send me more information on New Idea and Nisco Spreaders.

Name.....

Address.....





There Is Plenty of Light in the Farm Home Where There Is Electricity.
Light adds to the cheerfulness and comfort of all the members of the family.

the second electric plant which Mr. Amundsen has taken with him on Arctic trips and his faith in the practical service and dependability which they manifest is pretty good testimony that the electric plant will deliver the goods, if it is just given a chance.

But let's get back from the Arctic zone and look a little into the matter of the present-day conveniences that belong in the present-day farm home. Take light. We used to take the kerosene can to town and haul it home, filled with oil and perhaps with a potato stuck over the spout where the metal cap was lost, to keep the kerosene from spilling over the groceries. We put that oil in lamps and lanterns and lighted our way around the place as best we could. A little while before potatoes got too high in price, re-

tail, to use them for can stoppers, the tank wagons began to come around, leaving our oils and gasoline right at the door.

And a little later than that, it became possible to buy an electric plant that you could put in your garage, woodshed or basement, load up with kerosene for fuel and make your own electricity. You could run wires from that plant into your house, barn, or any other building around the place and, over those wires conveniences just naturally ran all over the place.

The first convenience you took off of that wire was light, electric light. All around the premises you had lamp sockets placed. You screwed electric bulbs into these sockets, turned on the electric current and there you were.

Touch a switch anywhere that was connected with one of your lamps and the light came on. It was bright, clean, no odor, perfectly safe, for no match was used to light it and there was no open flame—and it was convenient. Nobody had to clean or fill a lamp in order to get it—and when you were thru with it, you touched a switch again and turned it off. There has never yet been any light so thoroly satisfying, from every standpoint as electric light. And the farm home can have this light the same as any other.

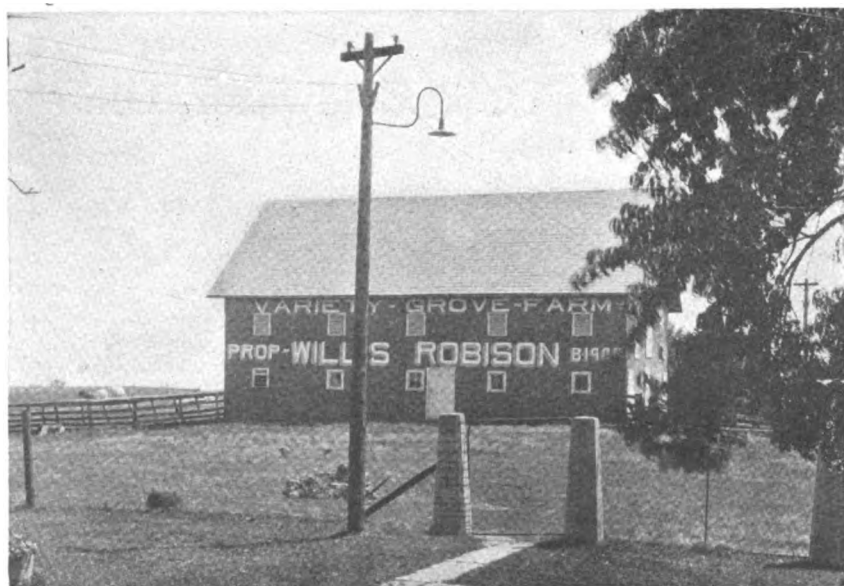
But something else comes over the electric wire. Electric power. It is practical to use electric power around the farm home to run any machine that, in former times was run by hand. That is, any machine that you used to turn with a crank can be run better, cheaper and more satisfactorily in every way with an electric motor. This includes the washing machines, churn, cream separator, grindstone, corn sheller, root pulper, bone cutter and others that will occur to you.

Sweeping the house was never accomplished by turning a crank, to be sure, but it called for mighty hard work with a broom. The modern electric vacuum sweeper enables womankind to make one of the most satisfactory uses of the power that comes into the home over a wire.

For running a vacuum sweeper requires none of the twisting, straining effort that ordinary sweeping calls for, as your housekeeper mighty well knows, and the result from vacuum sweeping are finer than the broom can accomplish. For no broom can tuck the dust away in an air-tight bag. The vacuum sweeper does that, but your broom stirs the dust up into the air, in the way of the nostrils of those who pass that way.

Then, power to milk the cows comes over the wire. It runs a milking machine, saves time, saves a lot of unpleasant labor and does a nice clean job of milking. The dairy farmer, if he does not already know about milking "by wire," would do well to investigate it. The thousands that are already using this modern method say it is the best ever—and their cows will second the motion.

We referred, a while ago, to the questionable judgment of allowing million-dollar wives to carry water for household use. Electric power, running an electric water system, which any farm home can have, offers the best means of relieving them of this arduous job. Electricity makes the water system automatic. It keeps water stored under pressure, so that it is ready at any instant, day or night, at the opening of a faucet. With the addition of a water heater, one can have the much-desired "hot and



A High Light with a Large Bulb Dispels the Gloom in the Farm Yard.




EVIDENCE

A prominent publisher wrote the building supply dealers of Iowa and asked them:

"What do you think of Mule-Hide Roofing?"

**200 answered, "The best in the market."
2 kicked.**

But better than this 100 to 1 vote were the reasons given, because most of the dealers said: "We like MULE-HIDE Roofing because our customers remain satisfied when they buy it." 

NOTE: — If you wish to see what the Iowa Dealers said, write for booklet XD. (No names are given.)

To us this is conclusive proof of our long-time belief that building supply dealers as a whole are first of all anxious to give satisfaction to their customers, and that they will support a product in which satisfaction is assured.

THE LEHON COMPANY

MANUFACTURERS

**44th to 45th Street on Oakley Avenue
CHICAGO, ILL.**

"NOT A KICK IN A MILLION FEET"

cold" running water at kitchen sink, bathroom and laundry. Bathtub and shower are equally possible to the farm home, thanks to the electric plant and electric water system which have been so nicely designed for farm home service.

These systems can be purchased with plenty of capacity to pump the water for stock at the barn and for sprinkling, washing buggies or automobiles, flushing out stable gutters and the like.

And heat, in moderate quantities, for the farm home can be provided thru a wire. That is, enough for the flatiron, for the electric toaster, percolator and the like. The electric flatiron is a particularly popular appliance in the farm home that has electricity. That slender wire heats the iron all right, but it does



And When It Comes Ironing Day Its Terrors Are Gone Where There Is an Electric Iron.

not heat the kitchen. It does not let the iron cool off, and the housewife does not need to traipse back and forth, from stove to ironing board. With ironing board adjusted to proper height and clothes basket at hand, she can sit and iron with considerable comfort and with much saving of time.

And so we might go on, enumerating the blessings that come into the farm home over these small wires, or thru slender pipes. But the foregoing is enough to suggest that the modern way—the electric way—is what we all ought to come to and what we will come to, one day when we come to appreciate how absolutely the old hand methods belong in the past. Getting our service by wire is going to become more and more popular, for it has everything to recommend it that the old-fashioned methods do not have. And it has no drawbacks that modern invention and development have not overcome so fully that, today one can take a modern electric outfit into the wilds of Africa or into the Arctic region, to say nothing of a remote

farm home and be assured of helpful, continuous service. Working with our hands is all right so long as that is the best way to do the job. It is all wrong when it becomes slower, harder, less efficient and less productive of results than using electricity. Let's get our household conveniences by wire, whenever it is possible.



Putting the Car Into Winter Storage

FOR those who store their cars during the winter months it will pay to follow the few rules given below:

Jack the car up so that the tires are off the floor, then place blocks—or small wood horses—under the axle for the car to permanently rest upon.

Deflate all tires to about five or ten pounds pressure; and if the garage is not dark, cover the tires with paper or cloth. If you wish, you can remove the tires from the rims, wrap in paper and hang up in a dry, dark room.

Drain all oil from the crank-case.

Drain all water from the radiator; when this is done, close all water cocks, pour in two quarts of wood alcohol, then drain off. This will insure you against any freezing where water might stay.

Take out all spark plugs, pour into each plug hole a half pint of kerosene, turn over the motor once or twice, then replace plugs loosely. This will keep the cylinder walls bright and clean, also the piston rings loose and free.

With a cloth saturated in kerosene, wipe all nickel; this puts on a film of kerosene, keeping it bright and free from rust.

Disconnect battery and place in a warm room. Test occasionally and if low, have charged.

And now with everything taken care of, place over the whole car a paper cover-all; thereby excluding all dust. When the robins sing again, you will find your car ready to hum from the start-off; then you will thank yourself for taking these few rules seriously.

O. C. WENDELL.



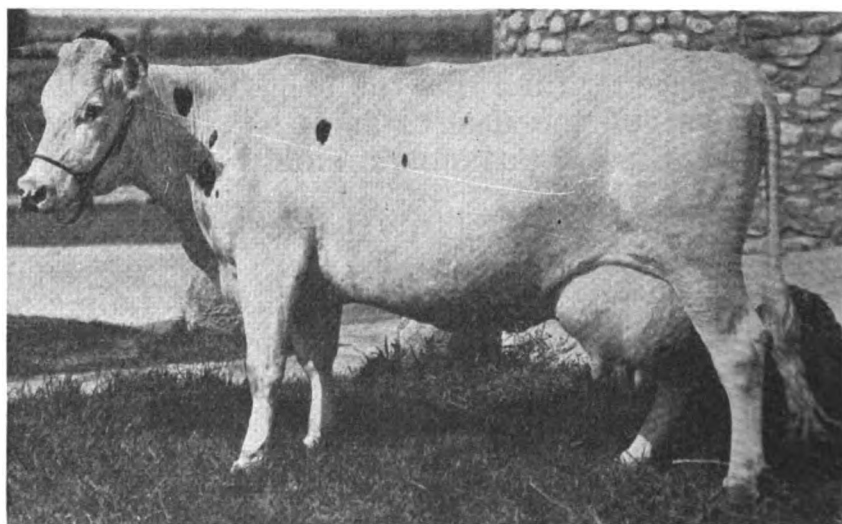
WHEN the winter's wood supply is being cut, the temptation is to remove only the trees that are easiest to get, and those that bring the highest prices. To yield to this temptation results inevitably in the reproduction of poor species and the rapid deterioration of the woodlot. When working in your woods, keep an eye to the future.



MORE than 1,500 technically trained persons, according to reports to the United States Department of Agriculture, are employed in studying farming problems in the State agricultural experiment stations. In 1921, 400 publications were issued containing results of their work.



SOME folks feed cows so they exist, others feed them so they'll produce. There's a difference.



Kolrain Marion Finderne, Having on October 28 Completed Her Year with 35,339.7 Lbs. Milk Containing 1,278.58 Lbs. Butter Has Set a New Mark for Milk Production, Not Only for the State of Michigan, but for All the World with the Exception of the State of Washington. Her milk record stands second only to the phenomenal production of Segis Pietertje Prospect, surpassing all other producers to date by a margin of nearly 1,000 lbs. Her record, as vouched for by her owners, Loeb Farms, Charlevoix, Mich., stamps Marion as one of the great cows of all time. It is particularly creditable from having been so closely following her four-year-old record of 1,036.3 lbs. butter from 28,851.8 lbs. milk, giving her the world's record for two consecutive years' milk production, starting in heifer form. Only two cows, regardless of age, have ever surpassed her total for two years' milk production—Tilly Alcartra and Adirondac Wietske Dairy Maid.

NO-LEAK-O

Piston Rings



Great POWER For Great Tasks

Tractors, like "tanks" in the war, must perform Herculean tasks. Power—great power is absolutely essential. Only strongly made No-Leak-O Piston Rings will enable the tractor engine to deliver its full power at all times under all conditions.

No-Leak-O Piston Rings are made with the famous non-clogging, "oilSEALing" groove which insures maximum compression and power under all heavy duty conditions.

This "oilSEALing" groove—found only in No-Leak-O—packs an oil film in between piston and cylinder walls like "packing" in a pump. Oil cannot possibly work up into cylinder heads to form carbon and "unburnt" gas and kerosene cannot leak into your crank case to weaken lubrication. Result—less gas, less oil, fewer repairs, more POWER.

No-Leak-O gives you oil control and compression in each individual ring.

Jobbers and Dealers: Write to-day for literature and liberal dealer proposition. Let us tell you how our National Advertising helps bring you business.

Owners: Write for interesting booklet, "The Piston Ring Problem and Its Solutions," telling why No-Leak-O does what no other ring can do.

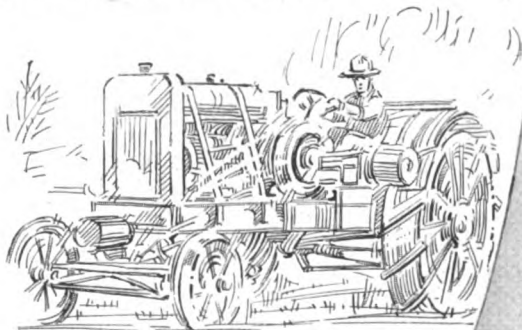
50¢
and up

READ THIS SIGN
Remember it—Look for it. It marks a Garage or Supply Store that is "live" and dependable. Even if your Garage Man doesn't display it, tell him you must have No-Leak-O Piston Rings for your next overhauling. Beware of imitations.

NO-LEAK-O PISTON RING COMPANY

Dept. F-7
BALTIMORE, MD.

One Price During Eight Years of Continued Success
One design—for all makes—50c and up



WON'T LEAK
because they're sealed with Oil

FORDS *and* FORDSONS



MOTOR TROUBLE ADVICE FOR FORD OWNERS

By F. M. Service

Fordson Gears Stick

To the Expert:

I have bought a Fordson tractor and when we start it we cannot shift gears until we move it a few feet while the motor is running. When we get the gears shifted the clutch does not hold. There is a grind which sounds like it is in the transmission. It just grinds at times. I would like you to tell me what is the trouble.—MIKE KAISER, Vincennes, Ind.

Answer—It would seem that your trouble is in a badly worn or adjusted clutch, release plate or a defective transmission drive shaft bearing. To properly

inspect these parts it is necessary to split the tractor and remove the transmission plate. The drive shaft can then be removed and the bearings examined.

When inspecting the clutch release plate, see that it is fully released from the clutch when the clutch pedal is all the way down. It would be well to also remove the clutch and disassemble and inspect the plates to see if they are worn or warped out of shape, as this would also cause trouble you are having.—F. M. SERVICE.



Fordson Loses Power

To the Expert:

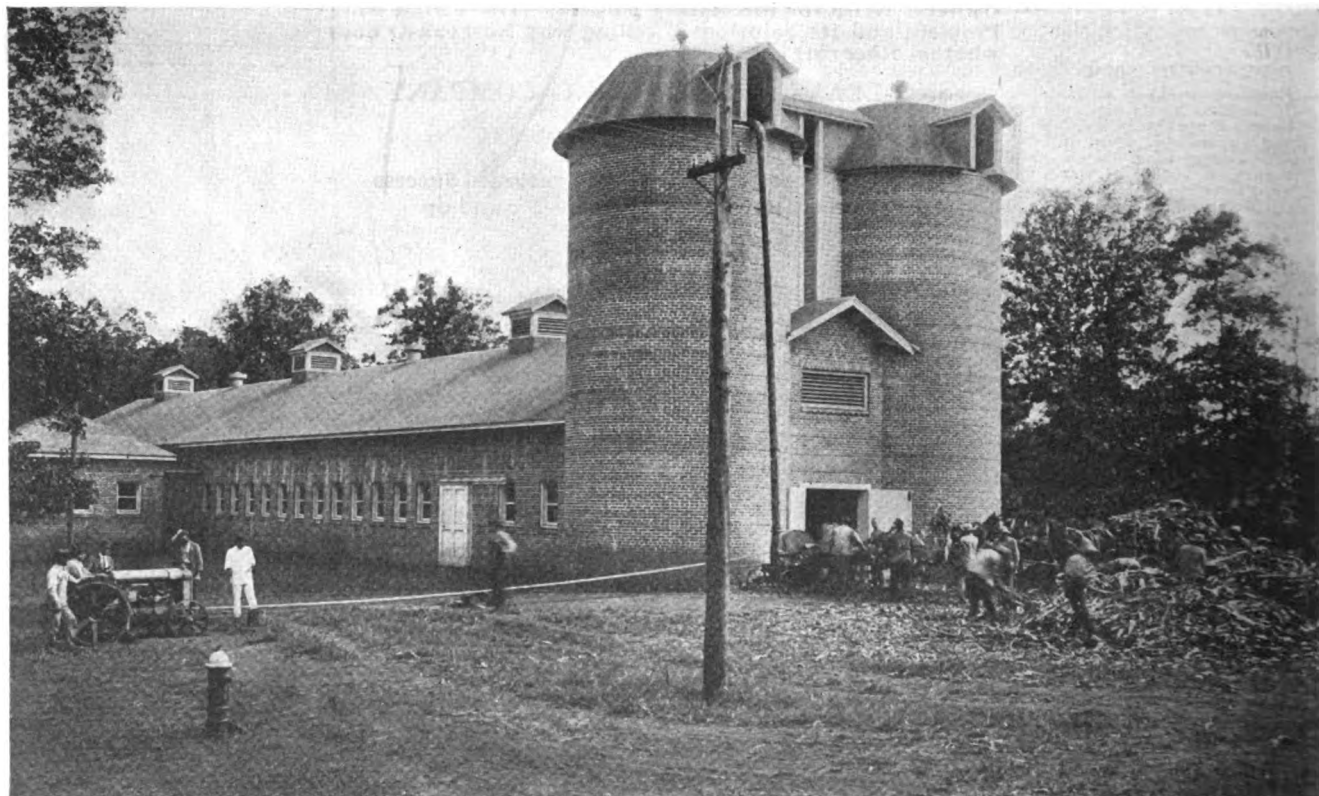
I hope you can give me some light on

the following problem: What makes a Fordson tractor refuse to run with the choke wide open? I know of several in this condition. They did run wide open when new, but won't any more, no matter how wide you open the needle valve.

I have had the needle valve and carburetor float chamber apart and cleaned it thoroly, but it makes no difference. The motor does not seem to have the power it did.—HECTOR JOHNSON, Medina, N. Y.

Answer—A cracked or leaky intake manifold would cause the trouble you are having, as the excess of air thru the crack or leak would weaken the mixture so that the choke would have to be partly closed. Also a burned out or cracked vapor tube would do the same thing.

Before starting to inspect these parts, however, be sure that your choke is really closed when the motor is running and not



Filling the Twin Silos on the State Hospital Farm, Morgantown, N. C. This outfit was used to demonstrate the value of a tractor for belt as well as field work by the Burke Garage Co., Ford dealer at Morgantown, and resulted in motorizing the State Hospital Farm.

Rigid Rail Tracks

Get More Power From Your FORDSON

No matter what kind of ground—no matter what kind of use—there is no more positive non-slip pull than is available in your own Fordson equipped with

RIGID RAIL TRACKS

They make an ever reliable crawler of your Fordson in ninety minutes.

MAKE A CRAWLER OF YOUR FORDSON

The lowest cost Crawler on the market.

DOUBLE THE DRAWBAR PULL

You do more work with the same amount of fuel.

ELIMINATE SLIPPAGE

Same speed as the wheel machine, but

LOWER AND NARROWER AND MORE POWERFUL

For orchard and vineyard.

A PACE MAKER IN ROAD GRADING

Plowing, Industrial Plants.

WORK ON SOFT, SANDY OR MUDDY GROUND

Fine for rice fields.

WILL OUTWEAR YOUR TRACTOR

With Hyatt Bearings.

TURN SHORTER UNDER A LOAD

A hand brake for each track.

EASY TO ATTACH

Anyone can do it in an hour.

The Hadfield-Penfield Steel Co.
BUCYRUS, OHIO

*Pulling 10 ft. 16 in. disc, Roderick
Lean disc harrow, weighted with
1200 lb. scrap iron. Largest disc
harrow made. Drawbar pull over
3000 lbs.*



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Mail coupon for 2 free books that show you how much comfort, happiness and rest "PHELPS" brings to farm homes.

DEALERS—PHELPS dealers are successful. We help you find prospects and close sales. Get all facts.

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614 First St. ROCK ISLAND, ILL.

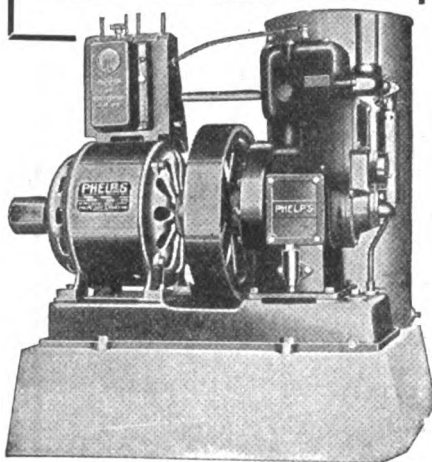
Phelps Light & Power Co.
614 First St. Rock Island, Ill.

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☐ Send me your FREE Dealer facts.

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Address _____

Town _____ State _____



Don't neglect a Cold

Dangerous sickness often starts with a cold. Ward off your colds with Musterole before pneumonia starts.

Musterole is a clean, white ointment made with oil of mustard. It has all the healing properties of the old-fashioned mustard plaster but none of the unpleasant features.

Musterole is not messy to apply and without the blister.

At the first sneeze or snuffle take down the little white jar of Musterole from the bathroom shelf and rub the ointment gently over the congested spot.

With a tingling warmth it penetrates the skin and goes right down to the seat of trouble.

Rheumatism, tonsillitis, lumbago, coughs and colds are all symptoms that call for Musterole.

Order Musterole today from your druggist. 35c and 65c in jars and tubes; hospital size, \$3.

The Musterole Co., Cleveland, Ohio
BETTER THAN A MUSTARD PLASTER



WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

simply shifted on the butterfly shaft, which would make it necessary to partly pull out the choke rod to really open the butterfly valve wide.—F. M. SERVICE.



Firing a Fordson

To the Expert:

After the Fordson tractor has been used for some time it often is hard to start on account of scale or dirt in the gasoline pipe that will clog up the vent valve or gas carburetor.

To overcome this I screwed a three-way valve on the kerosene carburetor and attached both feed pipes so that either gas or kerosene can be fed thru the same carburetor.

I have found this very handy for short jobs and there is no danger of burning out the vapor tube when you use gas out of the gas tank.

As soon as I have started the engine I can put it to full work at once and after a while I reach down and give the valve a quarter turn and it runs on kerosene without any spitting or sputter.—C. HELM, Fairview, Mont.

Answer—Your idea of starting your tractor is all right, except in cold weather. Then it would cause hard starting unless the carburetor was drained of the kerosene left in it when the motor is shut off and before the gasoline is turned on, as the addition of gasoline to the kerosene left in the float chamber of the carburetor would produce a mixture very hard to ignite when cold.—F. M. SERVICE.



Fordson Rings Loose

To the Expert:

I have a Fordson tractor which does not work good. It uses one gallon of oil a day. I had the carbon removed and pistons re-ringed, bored and lower edge filed away so as to keep it from throwing oil, but did not do any good. Then I had new rings put in again, but it does not do any better. It throws oil yet.

I took down the air washer and found the float was damaged with a crack. I got a new float and it does not do any better. Does the float have to sit level on water to work good? At present float hangs heavier on one side than it does on the other.

This tractor throws a blue smoke all times. It seems as tho we cannot regulate the adjustment needle to keep it from throwing blue smoke. The plugs in this tractor has to be cleaned from four to five times a day to remove carbon and oil. We cannot get this tractor idled down to light load without throwing oil, etc. Would a three-pieced ring keep the oil down?

The air wash has to be filled four time a day. Does it use too much water?—IRA H. SCHURTZ, New Plymouth, Ohio.

Answer—The trouble you are having with the spark plugs fouling and tractor emitting blue smoke, is doubtlessly caused to loose fitting pistons, and this is further brought out by the fact that the installing of new piston rings did not eliminate the trouble. We would recommend that you lap in .005 pistons and install an entire new set of regular Fordson rings, being sure to see that the taper of the ring is up. This can be assured by seeing that the edge of each ring on which the word "Ford" is stamped is placed up in the piston ring groove.

The air washer float should sit level on the water and if the one you have does not, you had better return it to your dealer for a perfect one. The amount of water you use in the air washer is gauged entirely by the length of time the motor is run, but for a continuous day's run the amount you are using is not so excessive.

When you are installing the new pistons and rings be sure and grind in the valves and go over the ignition system carefully, replacing any worn parts you may find. The motor should then be in good shape and throttle down and pull to your satisfaction.—F. M. SERVICE.



128,000 Fords in November

THE home plants of the Ford Motor Company worked on a production schedule for the output of 128,000 cars and trucks during November, according to reports from the Highland Park Plant.

This output schedule is approximately 43,000 cars and trucks greater than that set for November, 1921, when the home plants and branches thruout the country were working on a basis of 85,000 cars and trucks.

The Fordson Plant at the Rouge is maintaining a steady daily output averaging 200 tractors.

At the Rouge Foundry a daily average of 6,000 Model T cylinder blocks are being machined.



DON'T forget that spraying is the ounce of prevention that is worth several pounds of cure.



FERTILIZERS with fillers must bear an additional cost to pay for the freight on the filler material.



TOO much care can't be taken in aligning trees in setting out an orchard. Time spent on this will save a lot more time later on.

FREE "HANDY ANDY ON THE FARM" FREE

YOU all know Handy Andy. He's that ingenious chap who has "Handy Andy's Department" in FARM MECHANICS every month.

Handy Andy has picked out the best devices and ideas he has presented in his department and has put them into a book of handy size, 6 by 9 inches.

Handy Andy wants to give every subscriber to Farm Mechanics a copy of his new book free. All you have

to do is to send in \$1 for a year's subscription. If your subscription has not expired it will be extended for one year, but your copy of "Handy Andy on the Farm" will be sent to you at once.

"Handy Andy on the Farm" is a valuable book—a book that every member of the family will like. Read the Table of Contents—See all the good things this book shows you how to make. And the book costs you nothing—It's Free.

Table of Contents—Handy Andy on the Farm

Handy Andy in the Farm Shop.
Shaft Hanger That Is Simple to Make.
Force Feed Drill.
To Drill a Hole in Iron.
Disappearing Bench Stop.
Vise Jaw Face.
Homemade Leather Punch.
Cup for Bit.
Repairs Gravity Oiler.
Preventing Shop Drawer Spills.
Tool Bag.
Cage for Twine Ball.
Mending Broken Strap.
Mounting a Grindstone.
Self-Adjusting Bench Clamp.
Sandpaper Block.
An Engine Protector.
Measuring Box of Concrete.
Use for Auto Tire Casing.
House for Pump Engine.

Handy Andy in the Farm Home.
Hinged Stool for Kitchen Table.
Combination Bread Cupboard and Cutting Board.
A Hinge Broom Holder.
Table Adjustable in Height.
Oven for Oil Stove.
Ironing Board Cover.
Back-Saving Scrub Brush.
Useful Pin Cushion.
Clothes Line Holder.
Shoe or Home Desk.
Rotating Foot Scraper.
Buckles for Overalls.
Handy Andy File.
To Tighten Clothes Lines.
Novel Seed Corn Tester.
Wool Tying Device.
Convenient Combination Ladder.
Seed Potato Cutter.

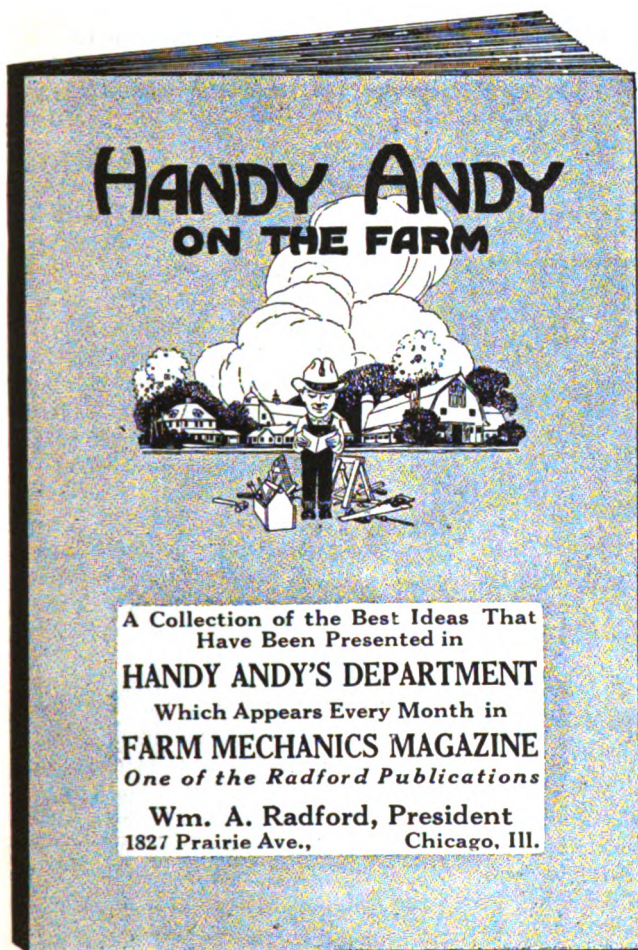
Handy Andy in the Garage.
Rig for Oil Barrels.
Barrel Without Faucet.
Tool for Changing Auto Tires.
Tool for Fastening Tire Chains.
Piston Ring Compressor.
To Mount a Tire on a Demountable Rim.
Extension Oil Can.
To Jack Up Auto in Storage.
After the Collision.
Radiator Filler.
Re-Using Dry Batteries.
Swinging Door Fastener.
Cinder Remover.
Pull Out the Ceiling.
Holds Door Partially Open.
Automatic Stop for Engine Pump.
Small Swinging Door.
Brake for Sled.
Grease Cup for Wagon.
Pipe Under Concrete.

Handy Andy in the Barn.
Barn Floor Scraper.
Ladder to the Hay Carrier.
Place for the Milk Sheet.
To Hold Feed Pail.
Liquid Manure Frame.
Feed Box Easy to Dump.
Medicine Funnel for Stock.
Self-Regulating Ventilator.
To Keep Milking Machine Clean.
Grain Bag Holder.
Handy Milk Rool for Strippers.
Ventilating Barn Window.
Hay Loft Tackle.
Swinging Door Holder.
Wire Line Holder.
Cement Hitching Weight.
Save the Horses.
Fist or Derrick.
Hog Slop Storage Tank.

Handy Andy in the Chicken House.
Chicken Feed Milo.
Electric Egg Tester.
Dry-Mash Hopper.
Protects Water Supply.
Catch Chickens with Hook.
A Good Trap Nest.
Automatic Chicken Feeder.
Chicken Grit Feeder.
Poultry Fountain.
Barrel Chicken Coop.
Sanitary Water Fountain.
Brood Coops for Hen and Chick.
Water for Poultry Yards.
Hog Feed Trough.
Corn Chopping Rink.

Handy Andy in the Field.
Fence Wire Splicer.
Barbed Wire Reel.
Wire Fence Fastening.
Handy Method of Marking Posts.
For Pulling Fence Posts.
Binding Stick.
To Anchor Fence Corner.
A Salt Box.
Handy Sand Cutter.
Useful for Cutting Bands.
To Keep Plow Out of Ground.
A Good Salt Box.
Adjustable Plowing Measure.
Eliminates Jolts of Roller.
One-Man Crosscut Saw.
Making the Best Ride Hay.
Prevents Backaches.
Corn Uncoverer.
A Simple Scaevrow.
To Move Heavy Tile.

Handy Andy in the Yard.
A Homemade Ladder.
Concrete Cistern Cover.
Handy Mail Box.
Mail Box Signal.
Making Spring Plow Clean.
The Both-Way Gate.
Pigeon Cote Weather Vane.
Improved Seed Flat.
An Adjustable Gate.
A Simple Bird House.
Garden Row Coverer.
To Tether Cow.
Support for Kettles.
Saw Horse.
Quick-Acting Latch.
Recovers Pump Cylinders.
Two-Way Gate Hook.
Gate That Lifts and Folds.
Handy Andy About the Farm.
The "Slip".
Simple Corn Unloading Method.
Stocks for Cattle.
Catches and Holds Horn.
Easily Made Shoveling Stand.
Easy Livestock Loading.
Lightens Killing Work.
Wagon Box Unloader.
To Oil Cultivator Blades.
End Gate Fastener.
Brush Sled.
Double-Blade Rock Saw.
To Rescue Mired Animals.
Gate-Closing Device.
Hog House Door Covering.
Tongue for Buckle.
Easy Springs for Wheelbarrow.
Modern Farm Building Designs.
Dutch Colonial House.
Square Hip-Roof House.
Home for the Work Stock.
Dairy Barn for 50 Cows.
Where the Corn Crops Is Safe.
Implement and Machinery Shed.
Saw-Tooth Roof Hog House.
A Good Colony Poultry House.



Also included in "Handy Andy on the Farm" are eight good farm building designs.

Fill out and mail coupon below to get a copy of "Handy Andy on the Farm" Free.

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TEAR OFF HERE

FARM MECHANICS, 1827 Prairie Ave., Chicago, Ill.

Gentlemen: Enclosed find \$1.00 for which enter or extend my subscription to Farm Mechanics for one year. Also send me my copy of "Handy Andy on the Farm," free and postage paid.

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Our Implement Inspector



HE finds much new and worth-while farm equipment offered to increase efficiency and cut down labor.

EDITOR'S NOTE: Farm Mechanics does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address Farm Mechanics Information Exchange, 1827 Prairie Ave., Chicago.

New Type Auto Stop Signal

A NEW type of auto stop signal that works mechanically rather

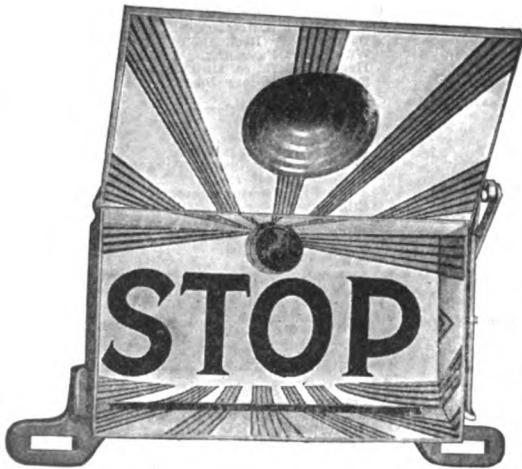
the brake is operated the lid of the box is opened and the signal flashes.

This device combines a stop signal,

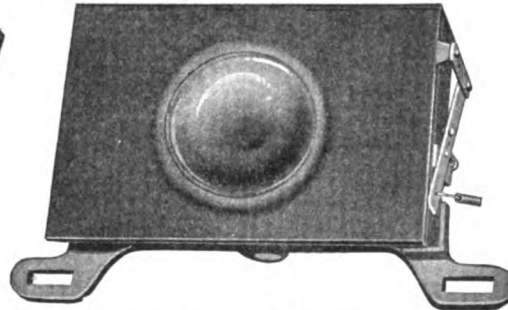
on the market since the Ford truck first came out in 1918 and have gained in popularity until they are now considered standard among the Ford trade.

These equipments are made in four different lengths and consist of pressed steel 5-inch channel frame with side springs $2\frac{1}{4}$ inches long, having a load carrying capacity of $1\frac{1}{2}$ tons. Three lengths are made to extend the wheelbase. The extension drive shaft is supported by standard Ford bearings obtainable at any Ford service station. In addition to the shortest equipment by which the wheel-

base is not lengthened, an 8 foot frame is supplied extending back of the Ford rear axle $3\frac{1}{2}$ feet. The long jobs give a wheelbase of 142 inches, 160 inches and 172 inches. Thus all lengths of commercial bodies with loading space back of the driver's cab from 8 feet up to 15 feet can be successfully mounted. These equipments are recommended for lumber dealers, furniture dealers, cartage and transfer concerns, manufactur-



Auto Signal with the Lid Open.



Auto Signal with the Lid Closed.

tail lamp, a backing light and a license plate holder.

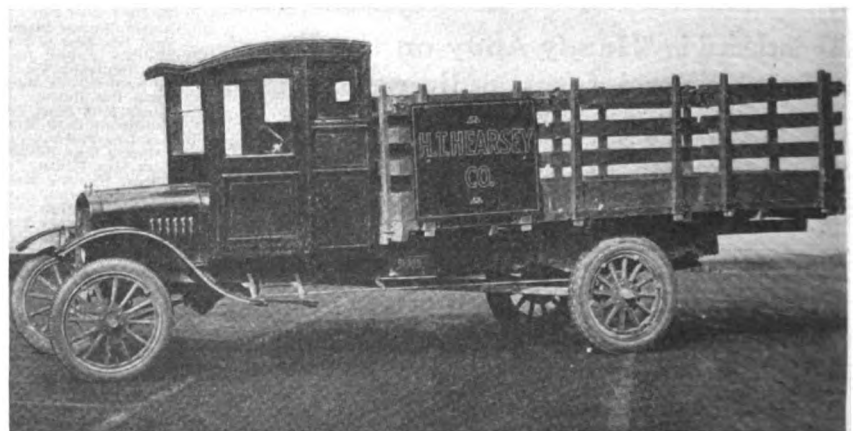


Extension Frame for Ford Cars

MANY different lines of business require special lengths and types of bodies which cannot be mounted with satisfaction on the standard Ford truck chassis. Extension equipment has been

than from the automobile storage battery is shown in the accompanying illustration. The signal is contained in a box which when not in operation as a stop signal carries the tail light. This illuminates the interior of the box so that the signal is clear when the lid is up and the signal exposed. While the signal is small and compact when the lid snaps up. This size together with the flash effect makes the signal loom up so that it cannot be overlooked by day or night.

The only working parts of the signal are the cover and the simple lever arrangement for raising the cover, with a spring to pull it back. The signal is equipped with a flexible bracket, so designed that it can be fastened to a convenient place on most every make of car. A cable is connected to the lever on the box and then to a hinged arm on the floor of the car. A short connection wire is attached to this arm and to the brake lever or rod. When



Ford Truck Equipped with an Extension Frame Which Increases the Wheel Base from 142 to 172 Inches and Gave the Truck a Much Greater Capacity.

ers, farmers, fire department trucks, passenger busses and many branches of industries where greater carrying capacity is necessary. The use of the long side springs and the patented feature of transferring the weight of the load to the wheel hubs gives much greater spring resiliency which is necessary where fragile or perishable goods are hauled and is particularly desired for conveying passengers.

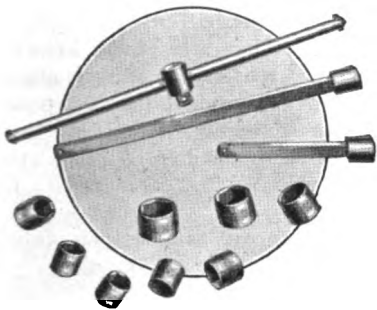
The installation of these equipments on Ford trucks is a very easy matter as no change is made in the original Ford construction excepting the removal of the Ford rear springs. The work usually requires from three to five hours' time and any mechanic or garage man can make the installation without trouble.



Heavy Duty Wrench Set

ANYONE doing any amount of service work on trucks and tractors will be vitally interested in this specially built set of heavy duty wrenches shown in the accompanying illustration. The outstanding feature of this special assortment is that one can now own a complete and perfectly adapted set of heavy duty tools at a small cost.

The eight sockets are milled from



Heavy Duty Wrench Set for Automobile Truck and Tractor Owners.

selected bar steel and are heat treated. Sliding tee handle and the 8-inch and 16-inch extension bars are of $\frac{5}{8}$ -inch special analysis steel. Any socket fits handle. To lengthen the reach it is only necessary to use an extension bar in between—or two if needed. Forty-eight wrenches can be built—8 husky Offset, 8 short Tee, 8 long Tee, 8 short "L", 8 long "L" and 8 extra-long Tee wrenches. Sockets range in size from 15/16-inch to 1½-inches.



Dump Body for Fords

A NEW dump body for Ford one-ton trucks is shown in the accompanying illustration. It is the lowest height steel dump body when placed on a Ford chassis and this remarkable fea



YOU, TOO, CAN RELY ON IT



"I rely on my Goodyear Klingtite Belt in all my corn shelling, corn shredding, threshing and other heavy-duty work on the farm," says Joseph Preisser, of Ashkum, Illinois.

"It is really a 'life saver' when a job has to be finished while favorable weather lasts. There is never any delay with it due to engine resetting because of belt shrinking or stretching. Nor do I ever have to 'doctor' the belt to put it in shape after it has been idle."

Goodyear Klingtite Belts are always ready for work. They need no breaking in. They require no belt dressing. They do not shrink, stretch or stiffen. They hold the pulleys in a slipless grip that delivers full engine power and saves engine fuel and maintenance costs. They outwear ordinary belts because they are so designed as to prevent ply separation.

These powerful, trouble-free belts are in general use among progressive farmers today. All you have to do to find out how good they are is to talk with a farmer who has one. He will tell you it is "the best help on the farm."

They come in endless type for heavy drives, and in cut lengths for lighter duty. Your local Goodyear Dealer sells them, and so do many good hardware merchants. For further information about them, write to Goodyear, Akron, Ohio, or Los Angeles, California.

Goodyear Means Good Wear

GOODYEAR
KLINGTITE BELTS

Copyright 1922, by The Goodyear Tire & Rubber Co., Inc.

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

Alloy Steel on the Farm

CHAPTER X

Steel Springs in Cold Weather

Automobile, truck, wagon and other springs tend to become brittle when very cold.

Clogging and caking with ice makes matters still worse, putting the steel to a cruel test.

Rough, frozen ground subjects the vehicle to a multitude of severe shocks which are, of course, transmitted to the springs.

Alloy Steel Springs Resist Cold Weather Conditions Better

The use of chrome, vanadium and manganese in steel making gives the steel greater resistance to the trying conditions of winter weather.

It seems to toughen the steel while greatly increasing its tensile strength. Our laboratory tests show that, while ordinary carbon spring steel is considered good steel when it will stand a test of 55,000 three-inch deflections, Interstate Chrome Manganese Steel stands 110,000 deflections in the same testing machine.

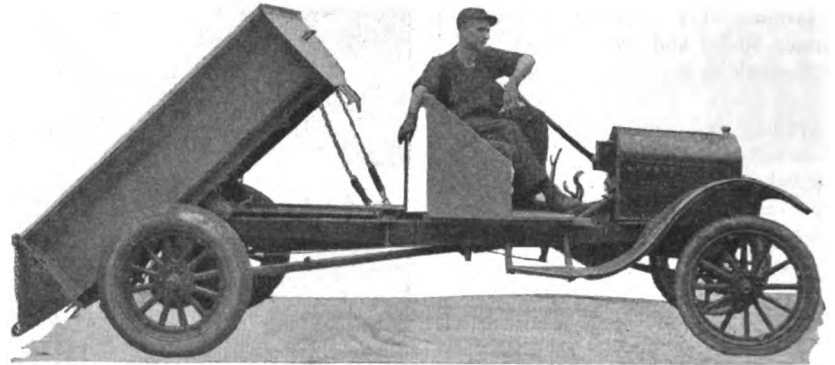
Other Steel Parts, Too

What is true of springs and spring steel is equally true of all the parts of automobiles, trucks and farm implements and tools made from steel.

By using alloy steel instead of ordinary steel these parts can be made lighter in weight for the same strength and endurance, or if they are made the same weight, will have a very greatly increased strength and endurance, not only in cold weather, but all the time.

Talk this matter over with the dealer who sells you repair parts; with the editors and publishers of the farm papers you like best; with the professors and instructors in agricultural colleges; with the officials of your farm associations and in every other way where you think a word from you will do good.

Interstate Iron & Steel Co.
104 South Michigan Avenue
Chicago



Ford Truck Equipped with Dump Body that Is Balanced so that It Operates Automatically.

ture practically eliminates danger of upset as well as facilitates easy loading.

Both construction and operation are very simple. A distinctive feature is the scale balance support which means that there is no hoist and that the body dumps automatically upon releasing of the locking device. The elimination of the hoist is a step forward in dump body design and very much simplifies construction and operation. The driver can operate the dump body from the driver's seat without stopping the truck. The dumping operation is as follows: Driver releases locking device and body automatically tilts until it reaches the 45 degrees angle, at which time the tail gate automatically opens and the load dumps. This tail gate can be arranged to spread material to any desired thickness on the road and further, the gate is of the double acting design, permitting change to express body.

The scale balance support is about 5 inches in front of the rear axle giving a very superior distribution of the load on the chassis.



A. S. A. E. Annual Meeting in St. Louis

THE sixteenth annual meeting of the American Society of Agricultural Engineers will be held at the Planters Hotel, St. Louis, Missouri, December 27, 28 and 29, 1922. An excellent program is being prepared and the plans under way give assurance of the largest and most successful meeting in the history of the Society. The fact that St. Louis is, from a geographical standpoint, almost in the center of the United States, it is anticipated that a large number of agricultural engineers from all over the country and, particularly from the South, will be in attendance.

The Implement, Vehicle and Hardware Association of St. Louis, which extended the Society a very cordial invitation to hold the annual meeting there, has appointed a committee to take charge of local arrangements and is co-operat-

ing in a very generous way to make the annual meeting this year a success.

For further information about the meeting write Raymond Olney, Secretary of the Society, St. Joseph, Michigan.

The election of officers of the American Society of Agricultural Engineers for 1923 has resulted as follows:

President, E. W. Lehmann, professor of farm mechanics and head of the department at the University of Illinois.

First Vice-President, A. H. Gilbert, chief engineer, tractor department, Rock Island Plow Company.

Second Vice-President, R. W. Trullinger, specialist in rural engineering, Office of Experiment Stations, U. S. Department of Agriculture.

Treasurer, Raymond Olney, who is also secretary of the Society.

Councillor, (for three years) William Aitkenhead, professor of agricultural engineering and head of the department at Purdue University.

Nominating Committee, W. B. Clarkson, chairman, A. P. Yerkes, and C. O. Reed.

The officers will assume their duties at the close of the annual meeting.



Bossy Needs Lime and so do Babies

COWS need lime and so do babies. Cows get their lime from their feed, babies from the milk they drink.

This is one argument used in encouraging a wider use of lime. "Sweeten sour soil" is one slogan being used. It is pointed out, first of all, that since the cow gives off much lime in her milk, her body needs must be supplied in some way, else both cow and babies suffer.

While all dairy feeds contain some lime, clover, alfalfa, soybeans, peas and others classed as "legumes," contain more lime than do such crops as corn, oats, timothy and redtop.

Since these legumes cannot be grown successfully on land which is very deficient in lime, it naturally follows that the land must be limed.

Farm Facts

Condensed Items of Interesting Information

Grain prices are guaranteed the Swiss farmers by the government, which for the last seven years has purchased the entire crop of bread-making grains. The prices paid are higher than the international market. The entire crop of Switzerland is sufficient to feed the population from 45 to 50 days, the balance of grains needed being imported.



Over 20,000 tons of garlic have been harvested in Italy this year. Two or three million pounds will be shipped to the United States.



Windmills are made by 24 American concerns, which in 1921, employed 1,779 persons. The value of the products of these concerns was six and one-half million dollars, which is one-third less than the products in 1919.



Canadian cattle for 25 years barred from entry into the United Kingdom is about to be admitted. The prohibition was enforced on the theory that the cattle would carry disease into the home herds. Better health of the Canadian animals and need of fresh meat and dairy products are expected to lift the ban.



Agricultural workers, representing U. S. Department of Agriculture and the State Agricultural Colleges visited 650,000 farms during 1921 and held 125,000 meetings, which were attended by 6,000,000 persons. More than 350,000 farmers introduced legumes into their cropping systems as the result of demonstration.



Canned and dried milk is superseding fresh milk in England to such an extent that the National Dairy Council is waging a campaign to bring the people to a better realization of the situation. The consumption per capita of fresh milk is less than one-quarter pint per day.



Bumper pea crop in the United States allowed canners to pack 13,042,000 cases of peas. Failure of the crop in France is expected to create a large export demand.



A billion dollars worth of foodstuffs were exported by the United States in 1921. Of this amount breadstuffs contributed \$750,000,000, half of which was for wheat.

Make Your Wood Lot Yield Annual Dividends

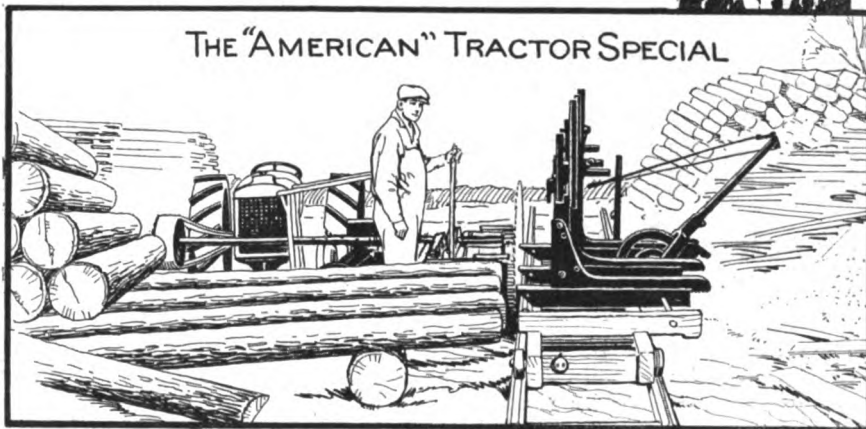
CUT dividends from your timber tract. From a 20 acre timber tract you can cut lumber products worth \$300 to \$400 annually without impairing next year's yield.

All you need is an "American" Tractor Special Saw Mill. Your tractor—a Fordson, Samson, I. H. C., Hart-Parr, Oil-Pull, Cletrac, Avery, or any two plow tractor or gasoline engine furnishes ample power. Portable, easy to operate, economical to run. Larger sizes for larger power.

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Any windmill which does not have the gears running in oil is only half oiled. A modern windmill, like a modern automobile, must have its gears enclosed and run in oil. Dry gears, exposed to dust, wear rapidly. Dry bearings and dry gears cause friction and loss of power. The Aermotor pumps in the lightest breeze because it is correctly designed and well oiled. To get everlasting windmill satisfaction, buy the Aermotor.

Write today for Circular.

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A year's supply of oil is sent with every Aermotor





Vulcanize Your Cuts or Punctures in 5 Minutes

No tool-kit is complete without a Shaler 5-Minute Vulcanizer. It is a necessity and the greatest convenience ever offered to the motorist.

Why take chances with cold patches when you can make a heat-vulcanized repair that will "stick"—even outlast the tube—in five minutes?

The Shaler 5-Minute Vulcanizer is easy to use—you need only a match. Always ready—never bothered by wind or storm. Cannot injure or burn the tube. No gasoline—no danger of fire.

Get a Shaler 5-Minute Vulcanizer from your dealer. It will soon pay for itself by the saving in time, trouble and tire repair bills.

Complete Outfit \$1.50

Slightly Higher in Canada and West of the Rockies

The outfit includes the vulcanizer, 12 Patch-&-Heat Units (6 round for punctures and 6 oblong for cuts)—ready to use—with complete instructions. Extra Patch-&-Heat Units 75 cents a dozen.

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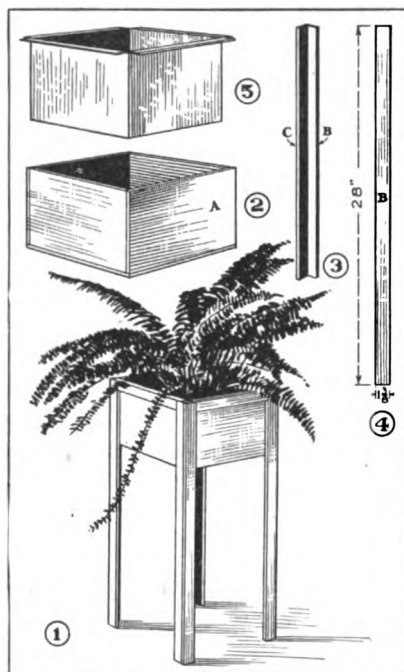


WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

SOMETHING THE BOYS CAN MAKE

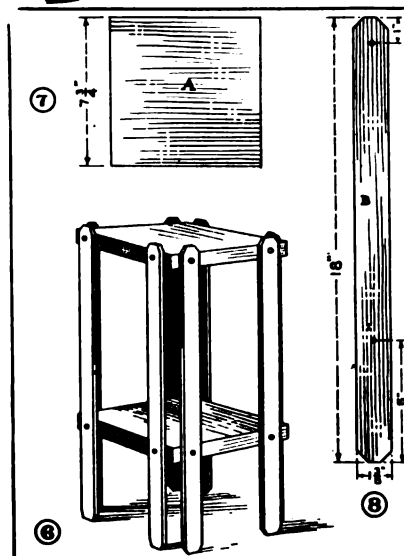
A Gift for Mother

FIRST in your thoughts of Christmas gifts will be what to get for mother. Of course, there is nothing that would please her as much as something you made yourself, and that is why I am showing in this article how to make a plant-stand, a tabouret and a clock-case. Select the thing you think she would like best, and get to work on it at once so



there will be plenty of time to complete it. With mother provided for, you can spend what time is left on something for father. Perhaps a clock-case will please him.

The plant-stand in Fig. 1 is made out of a grocery-box and lattice-strips or laths. The box of the model (Fig. 2) measures 11 inches square, but an oblong

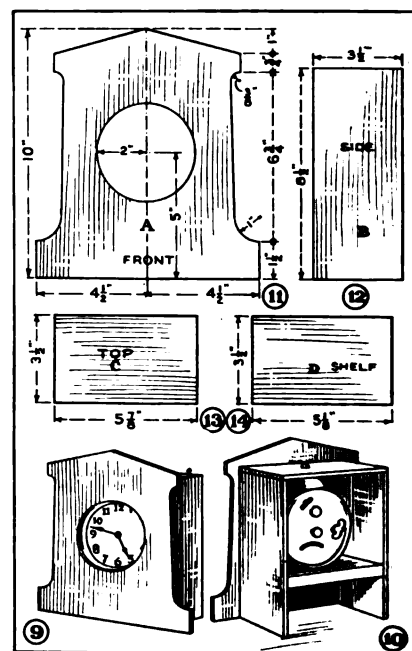


box can be used just as well. Drive nails into any of the box boards that show signs of loosening, and plane off ends and edges that project.

The legs are made of two pieces of lattice-strips or laths nailed together (B and C, Fig. 3). Cut the strips of the length shown in Fig. 4, and saw or plane enough off one edge of strip C to allow for the thickness of the overlapping strip B. Nail the legs securely to the box corners.

An indoor plant-box should have a metal liner unless the plant to be kept in it is potted and has a saucer placed under it to catch drippings. Figure 5 shows a metal liner. You can get a tin-smith to make one for you. Have it made enough smaller than the box so it will fit loosely.

If plants are to be planted in the liner, it will be well to have a small brass pet-cock soldered to the bottom of the liner,



to provide for draining off surplus water.

Stain and wax, shellac and varnish, paint or enamel the plant-stand.

The tabouret (Fig. 6) requires a top and a shelf $7\frac{3}{4}$ inches square (Fig 7), and eight leg strips of the length and width shown in Fig. 8. Pieces A may be cut from the box ends $\frac{3}{4}$ inch thick, leg strips B from lattice-strips or laths. Trim off the ends of the leg strips as shown, and bore a pair of screw-holes in each where indicated.

Sandpaper all of the pieces before assembling. Mark the positions for the legs on the edges of the top and shelf $\frac{1}{2}$ inch from the corners.

The clock-case (Fig. 9) has been designed to hold an ordinary size alarm-

clock (Fig. 10). Preparing the face is more than half of the work. Lay out the piece by the pattern of Fig. 11 on a board $\frac{3}{8}$ inch thick, and cut it out with a hand bracket-saw, cutting close to the lines. Finish up the edges with a chisel, plane and sandpaper. Figure 12 is a pattern for sides B, Fig. 13 a pattern for top C, and Fig. 14 a pattern for shelf D. To provide for fastening the clock in the case, bore a hole thru top C for the shank of the ring-bolt to fit in, and two holes in shelf D for the legs to fit in.

In assembling, nail the side pieces to the shelf, then set the clock in position, and nail the top in place.

If you wish, you can hinge a door to the back of the case. Finish the clock-case as you think mother would like it. You can sort of hint around to find out her preference.

(Copyright, 1922, by A. Neely Hall).



Planning Ahead to Assure Ice Supply

MANY farmers, when the rush of fall work is over, utilize the opportunity to go over their ice houses to be sure they are in shape for the winter crop, or that new storage space is not needed.

In connection with this, the New York State College of Agriculture points out that it is not necessary to build an expensive house with insulated walls, but that a mere shack in which the ice is carefully packed will keep about two-thirds of the supply stored. However, say a double-boarded, well-roofed house is worth the difference in cost, and except when strictest economy in materials is necessary, should always be preferred to the uninsulated shack.

Farmers who wish to construct ice houses plan to get the concrete foundation ready before frost. The second stage of construction—the frame work and inner lining of the walls—may then be completed any time before the ice harvest. If the construction of the building is made a spare-time job, the outside walls or siding and the roof may be put on later.

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For the Old Motor

The snap and life of a new motor is quickly returned with the installation of

HOESS HUMANIZED PISTON RINGS

They breathe with the motor—
They save gas—
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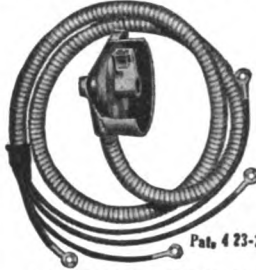
Ask your garage man—he knows about them.

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Price Complete with Wiring Assembly in Metal Conduit **\$3.60**

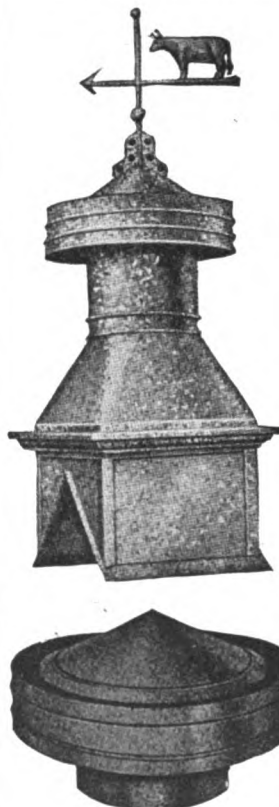
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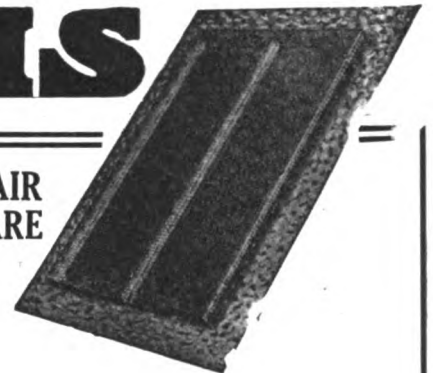
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Our Readers Are Requested to Make Free Use of this Department for Questions and Answers on Modern Farming and Farm Improvements

Power Ice Saw

Editor FARM MECHANICS:

An ice-cutting machine which does the work of six men and one horse has been built from parts obtained from a discarded Ford. The engine, radiator, gasoline tank and coil are mounted on substantial runners. The saw is connected to one of the axle shafts cut off short, while the torque tube makes an excellent saw mounting and provides the necessary flexible connection between saw and engine. The saw is 40 inches in diameter and will cut ice 17 inches thick. The clutch and feed control is from the front. The engine runs on high when the saw is working. The machine is fast and easy to handle.—H. F. BLANCHARD, Tuckaboe, N. Y.



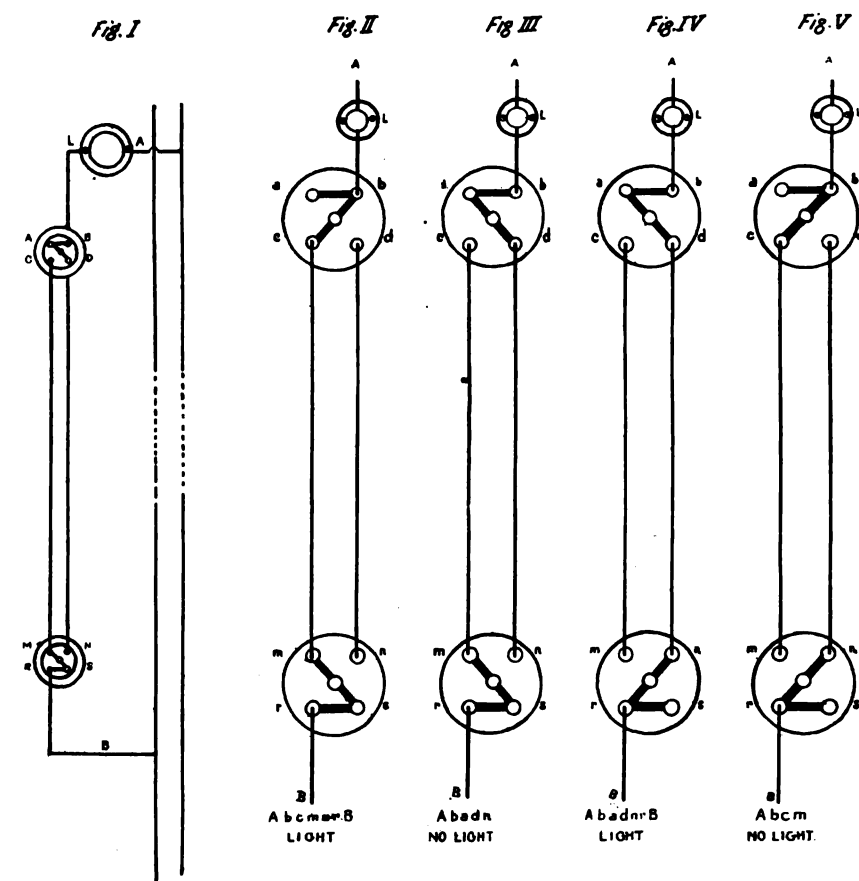
Three-Way Switch

Editor Farm Mechanics:

Having seen in your valuable paper that you take the trouble to answer questions for your readers, I would like to ask you the following:

How can an electric light be controlled from more than one switch—WM. V. DEL SOLAR, Pisca, Peru, S. America.

Answer—A light is turned on or off from two different points by means of special switches, called three-way switches. Common instances are, where

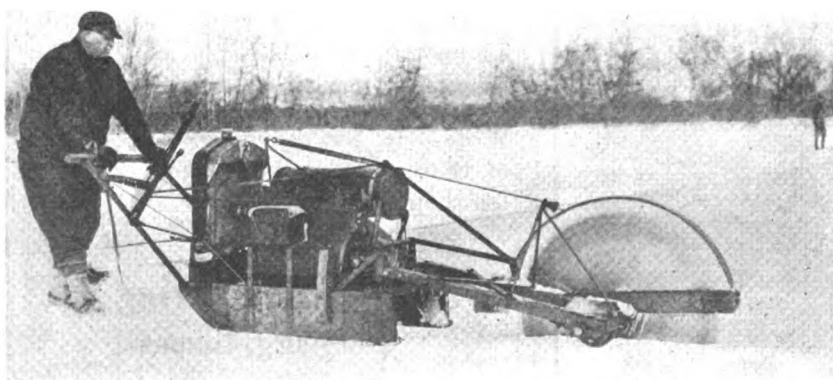


Drawings Showing How the Three-Way Electric Light Switch Operates.

it is desired to control a hall light, say down stairs, from a switch in the lower hall and from another in the upper

hall; or where there is a light at the barn or on a pole in the yard. This can be controlled from a switch, perhaps by the kitchen door and from another at the barn. By means of this arrangement, a person desiring to go down stairs, for example, at night, can light the lamp down stairs from the switch in the upper hall. When he is down stairs he can turn off the light from the switch in the lower hall. The light can be turned on or off from either point.

A study of the diagram will make plain the operation of these switches. Here L, the lamp is connected by A to one side of the circuit. B leads, say from the upstairs switch to the other side of the circuit. It is plain that both switches must be turned so that one



Ice Cutting Machine that Was Made of a Discarded Ford Engine.

of the dummy wires between the switches is connected, thru the switch to both live wires of the circuit. When either switch is turned so that the connection is broken, there is no light. Fig. 3. If one switch is turned, to break the connection, and then the other switch is turned, connecting the other dummy wire with the circuit (Fig. 4) there will be light.—THE EDITOR.



Crop Increase Almost Pays for Drainage

THE cost of draining many fields can almost be paid for by the crop increases obtained the first year after the tile are put in, according to results obtained during the summer just past by W. G. Duncan, who is co-operating with County Agent F. O. Townes and the farm engineering section of the Kentucky College of Agriculture in carrying out a drainage demonstration on his farm near Luzerne, Muhlenburg County. It cost him \$32.02 an acre to put in the drainage system but the crop of cowpea hay from each acre of the drained area this year was valued at \$23.88 more than from each acre of the undrained section. The drainage system therefore lacks only \$8.14 an acre of having paid for itself.

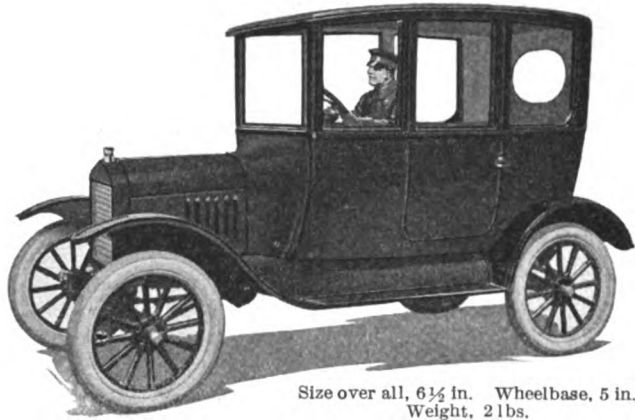
The field being used in the demonstration contained about 20 acres, 11 of which were drained. The other nine acres had better soil on them and since they were not as wet as the 11 acres, they were left undrained so that the yields from the drained part of the field could be compared with those from a part of the same field that was not drained. The system was put in during this last spring, all the trenches for the tile being dug by hand. The cost of \$32.05 an acre for putting in the tile probably could have been reduced had some of this work been done by machinery. Immediately after the drains had been put in, the entire 20 acres was treated with acid phosphate, which was applied at the rate of 200 pounds an acre, and the field planted to cowpeas.

When the cowpeas were cut this fall, it was found that the undrained part of the field yielded 3,758 pounds of cowpea hay an acre while the drained part of the field yielded 4,350 pounds of hay an acre, or 1,592 pounds more an acre than the undrained area. This increase in the yield was valued at \$23.88 since the hay sold for \$30 a ton.



DAIRY improvement association records shows that the feed cost of 100 pounds of milk varies from 40 cents to \$1.30, depending largely on the production of the herd.

ATTENTION, BOY FARMERS!

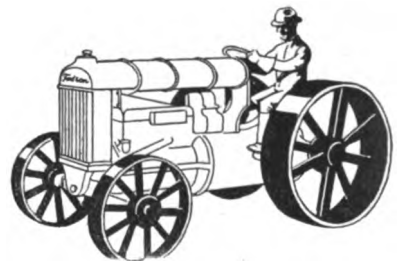


Size over all, 6½ in. Wheelbase, 5 in. Weight, 21 lbs.

Make your Daddy take you to town; go to the Ford Garage or a toy store, and ask for this Toy Ford Sedan. It has no clockwork to get out of order. An exact "kid brother" of the regular Ford. Daddy wants to please you. And he'll be sure to tell Santa Claus that you want this dandy toy Ford Sedan.

Help Daddy with the Plowing!

See, this Toy Ford Tractor has wheels that travel uneven surfaces and does everything just like Daddy's tractor. Of course you want the Toy Fordson Tractor, too!



Red wheels, grey body, gold trimmings. 6 in. long, 4½ in. high, weighs 1¾ lbs.

DADDIES! Your Local Dealers Have Them

Renew your own youth in the joy of Christmas giving. These toys will last your youngster indefinitely.

FORD DEALERS! 4,000,000 Ford owners, and millions of other Christmas toy buyers, will want these toys for Christmas gifts. Get in on this big market. Write today for prices, and circular showing free display material. Arrange with your local stores of all kinds to handle these novelties.

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TRY OUR PLIERS, SMALL SCREW DRIVERS, ETC.



Helps for the Housewife

MECHANICS in the HOME



What to Give Your City Friends for Christmas

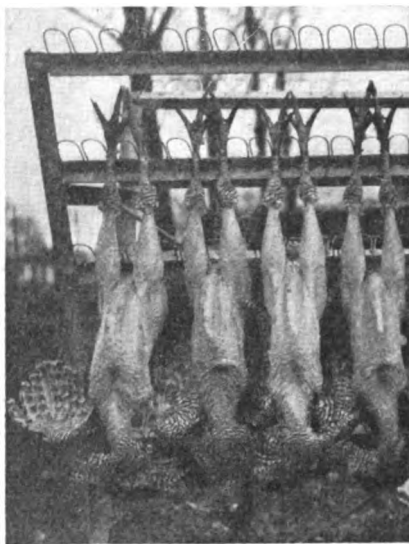
BY DORIS W. McCRAY

IT is a strange characteristic of most of us, that we like to receive as gift those things which we cannot have every day. Last year a city family was delighted with a little pig ready to roast for the Christmas feast. It broke the monotony of turkey dinners of preceding years. My husband scalded and scraped it, and dressed it all ready for its chestnut stuffing. It was a little pig of the bacon type, not too fat, and he put an apple in its mouth to be roasted that way. We were fortunate in having a taste of it, too, and while we were used to the taste of real pork, it was fine for Christmas dinner.

Butcher shops are not always sure of the freshness of their meats, and it is surprising how many folks in town are simply delighted with a ham ready to bake, home-made sausage made from good meat, without a filler that the butchers use to increase the quantity and stretch the flavor. Sausages in casings may be well wrapped and sent thru the mails in cold weather. Sausage balls are often cold packed, and will keep this way even if the weather is warm. A homemade cheese or a hickory cured bacon, or a crock of Philadelphia scrapple or head cheese are equally welcome. Commonplace things, you may remark, but to the folks who don't have them they are treats as much as grape-fruits and walnuts from California would be.

Of course if you are sending this kind of gifts, put a Christmas touch in the wrappings. If the package is to

be boxed, be sure to wrap holly paper and tinsel ribbon about it. If you live close to town, and can play Santa Claus on Christmas eve, deliver capon with an



Capons Dressed Ready for Market or as a Christmas Present to Friends.

envelope tied to one foot, and a gay Christmas message inside. Last year we marketed capons at the same price per pound as turkeys, and fortunate were the friends who received them as gifts, for the flavor is unrivaled.

One woman is sending this year to all her friends, cans of fruits or vegetables. With her tin can sealer and pressure cooker, it is easy, and the tins are much safer to ship. To Vermont she is sending cans of tender young carrots, red raspberries and asparagus. To California she is sending red cherries

for real cherry pie, while others are receiving cans of mincemeat, mush-rooms, roast beef, or fried chicken. A woman in Minnesota has built up a profitable trade supplying Christmas orders for jams, jellies, conserves and grape juice, which shows that these things must be really appreciated by folks who do not make them. An old bachelor, a school teacher far from home, or a young housekeeper struggling with her first biscuits all appreciate these sweets like mother used to make.

One country girl grows gifts in her garden. One Christmas she will send to a friend a reed basket, for she is skilled in basketry. This will be filled with apples, chestnuts, and hazelnuts. The next year she will send in a flat box, straw flowers surpassing those in a florist shop, and each successive year she will renew the bouquet in the little reed basket, varying it some years with bittersweet berries gathered from the woods. Thus she is furnishing a colorful bouquet from one holiday season to the next, and her friends look forward to her bouquet each year.

While we can't send the clear fresh country air, we can send to the folks who live in town something that will bring a smile.



Candies For Christmas

BY DORIS W. McCRAY

CANDIES do make good gifts. To the older folks they taste much better if homemade. For the children they are safer if made from real sugar and butter, knowing there is no glue, coal tar coloring, and things harmful to their little stomachs.

To make good candy is an art, requiring knowledge and practice. When Gabriel Daniel Fahrenheit perfected the thermometer, he little dreamed that it would be appropriated for use in candy making. By its use the boiling sugar can be snatched from the stove at the exact moment, rather than bothering with uncertain tests to decide when it has reached the soft ball, or caramel stage.

Fondant is the basis for many candies. To make good fondant, use two and a half pounds of granulated sugar, dis-



This Little Pig Was Dressed as Shown in the Picture and Made a Very Welcome Christmas Gift for a Friend of a Farmer.

solve in one and a half cups of hot water. Add either one-fourth teaspoon cream of tartar, or else two tablespoons of white corn syrup. One of these is very necessary, since corn syrup is a sugar of much finer crystals, and tends to make the candy finer grained. Cream of tartar "inverts" some of the granulated sugar to a sugar which has finer crystals. Bring to a boil, skim, cover saucepan a few minutes. Put in thermometer, fastening to side of saucepan. With a fork wrapped with muslin wipe the sides of pan, to prevent formation of large crystals. If they have already formed, pour into another pan, without stirring, and continue boiling.



Dipping Chocolates for Christmas.

As the sugar solution becomes more concentrated, the boiling point is raised. When the thermometer registers 240, pour mixture onto a platter sprinkled with warm water. The top is sprinkled again to prevent crust forming. As soon as slightly cooled, so that it will crinkle at the edge when touched with the finger, knead with wooden paddle, then with hands until soft and creamy. Cover closely with oiled paper if to be kept awhile in a cool place.

The fondant is then ready to be worked up into shapes. Last year two of us worked up five pounds in an evening, and dipped it in chocolate. This is the one time my husband ever helps in the kitchen, for he does like working flavors and colors into the fondant, and the necessary tasting. With vanilla, white is customary, green with pistachio, white with peppermint, dark red with cinnamon, green with winter-green, yellow with lemon, and orange with orange juice flavor. The fruit colorings come in bottles. Cranberry juice makes good flavor and color. Almonds, walnuts, hickory nuts, pecans and butternuts all go into different candies. Into others we put dates, figs, raisins, maraschino cherries, candied orange peel, citron, preserved ginger, or cocoanut, making the shape characteristic so that we can tell them apart.

Most of the candies are dipped in

Contract Ditching A Big-Profit, Spare-Time Business for Farmers



**Ed. Uvaas Made \$1900 in
84 Days' Work**

I purchased one of your No. 1 tile ditching machines in April, 1915, and the gross earnings from 84 days' operation were \$2200. I paid out for help and supplies \$287.00, and my repair bills amounted to \$20. This netted me \$1902.00. My crew consisted of one man beside myself. I had never done contract tiling before getting your machine and my farm work took up considerable of my time.

ED. UVAAS, Larsen, Wisconsin

\$71.00 in oneday

On one job I cut 117 rods of ditch, averaging 42 inches deep, made four connections and two curves in one actual day's work, for which I received \$71. I passed the 41 mile mark of ditching with my machine on this job, and the machine is in A-1 condition. This, in a little over three years, and I have not run the machine one half the time, having other work to attend to.

R. W. SHERRARD,
**\$6,350 from one Season's
Ditching for J. E. Griffith**

I own and operate a No. 1 Contractor's Buckeye Ditcher and as an investment it cannot be beat. I recommend it to any one going into the business.

I have dug 268 rods in 10 hours, and I dug 18,370 rods earning \$6,350 during the 1918 season. During that time I was often held up by lack of tile, and harvest. I average 175 rods per day.

J. E. GRIFFITH,

IF YOU have ever looked into the contract ditching field, you know that steady demand and big profits are certain--*with the right ditcher.*

If you are interested in getting the cream of the contracts in your vicinity, get in touch with us immediately. Whether you are an experienced contractor or just thinking of getting into the work, on either a full-time or part-time basis, get the facts regarding the

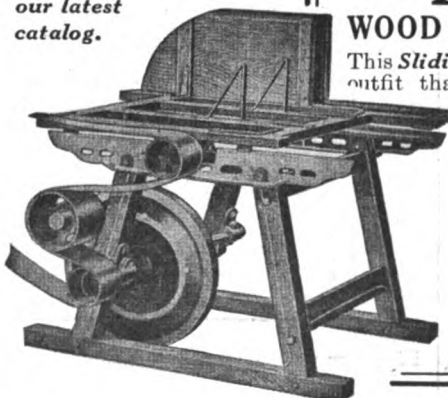
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This machine is the undisputed leader under all conditions of soil and climate. It furnishes its own power. It cuts through hardpan and frost. It operates well in swampy land. It gives you **100 to 150 rods of ditch each day**--every foot clean, smooth, true to grade and ready for tile or pipe.

Drop us a line today. Let us show you how others have become independent through this work--how you can do the same, right in your locality.

**The Buckeye Traction Ditcher Co. (7)
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Write to us for
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FREEMAN WOOD AND POLE SAW FRAMES

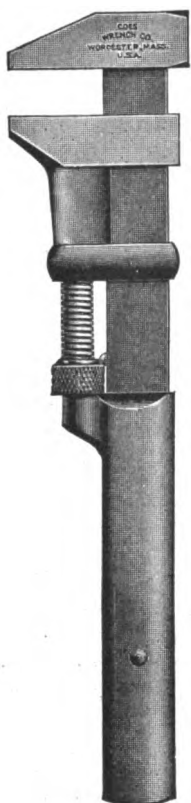
This *Sliding Table Pole Saw Frame* is a sturdy outfit that is winning many friends among farmers in all parts of the country. It is built with a sliding table and the balanced wheel is on a separate shaft entirely out of the way.

We also furnish tilting table frames and mandrel sets.

All wood saws are made right hand unless otherwise ordered.

**Freeman Mfg. Co.
200 Lakeside Ave., Racine, Wisc.**

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Coes Wrenches are built to give better service and last longer than any other wrench on the market.

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dealers*

Coes Wrench Company

Worcester Massachusetts

chocolate, leaving some of them without dipping to give variety to the boxes. We buy the confectioner's dipping chocolate at a candy kitchen, melt it in a double boiler, being careful to remove from the stove as soon as melted. Overheating ruins the chocolate for dipping. As soon as cool, we start dipping. Professionals dip with their hands, but we like forks better, using two of them. Dropping the center into the chocolate, we turn it over, pick up, and let extra chocolate drip off between tines of forks. If too hot, the chocolate will melt the center, and will not stick well. Then put chocolates on oiled paper to cool. As well as fondant, we often dip fudge, divinity, small triangles of fruit cake, animal crackers, stuffed dates or prunes, marshmallows and candied apples and cranberries.

For glace fruits boil the sugar and water to 310 degrees. Fudges are cooked to the soft ball stage, the same as the fondant. After it is taken from the fire, let it cool, before starting to beat, and it takes less time to beat it. Taffies, peanut brittle, and caramels all may be packed with the chocolate coated fondant.



Huge Containers for Milk Shipments

TO speed up and cut the cost of handling freight of less than carload lots, the New York Central Railroad has installed what is called the "container" system, by which steel containers are loaded and unloaded from flat cars by derricks.

In line with this policy, the railroad has put in use 600-gallon glass lined con-

tainer tanks for the handling of milk shipments.

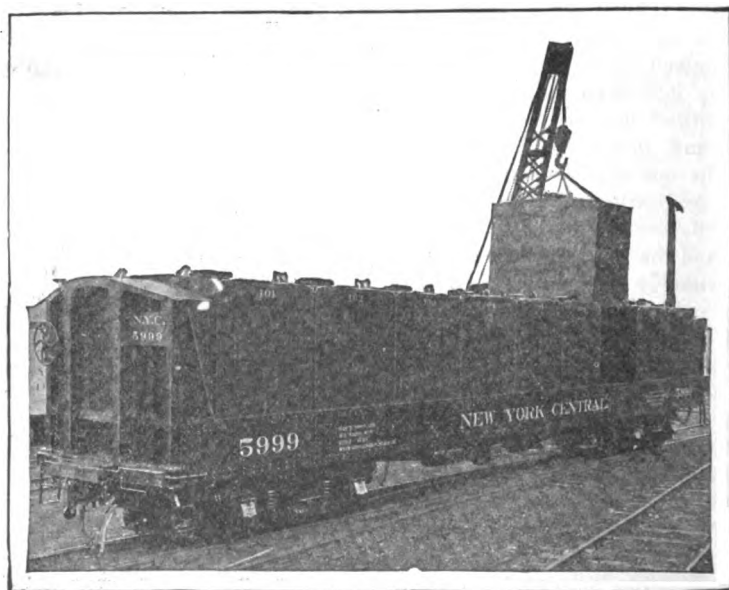
The glass-lined tank is encased in an insulated container. Time-saving and labor-saving is accomplished in every operation of handling milk by the use of the container car tank. The liquid being placed in the tanks at the proper temperature and the container being properly insulated, the use of ice is eliminated. These tanks may be made as large as required, or as large as may be transferred over the highways.

In actual service all of the containers from the car will be hoisted and placed on a motor truck regularly in about a minute per container. To transfer the same amount of milk between truck and railway car in the standard 10-gallon cans would require over two hours in manual labor.

The cleaning of one of the large 600-gallon containers could be accomplished within five minutes, while it would require fully an hour to clean 60 cans required to carry the same 600 gallons of milk.

Platforms requiring extensive space for handling the 10-gallon milk cans will be done away with. This will greatly facilitate the handling of milk at the unloading platforms, because more cars can be handled in the same space and in less time.

The consumption of milk in large cities has had a steady increase, and of course it is a railroad problem to supply facilities for the handling of milk. As long as the 10-gallon cans are used, each can must be handled individually, but any milk station shipping 600 gallons or more, or multiples of any designated size of tank, could utilize the container car tank service and lessen the handling at



Flat Car with Glass Lined Containers for Large Milk Shipments. The picture shows how the tanks of milk are unloaded.

the shipping point and at the receiving point.

The limiting feature of a liquid container would simply mean the capacity of the truck for transferring over the highways. The tank can be made to carry in bulk any amount—600, 1000, 1500 or more gallons of milk. The capacity depends solely upon the truck.

In the milk containers, the class-lined tank is sealed and locked, and in addition a regulation refrigerator car ice hatch plug is used for insulating purposes. This plug is dropped into the opening, and then the container cover is fastened down and sealed.



Standard for the Layers

EVERY poultry keeper should have a standard to guide the monthly egg production of his flock. One hundred and sixty eggs a year average for the flock makes a good standard, says W. H. Allen, extension specialist in poultry husbandry from the New Jersey State Agricultural College. This is the yearly production that most of the egg laying contests in the East have averaged during the last 10 years.

The average number of birds kept each month should be known. By dividing the number of eggs laid for the month by the number of birds kept, the number of eggs that the flock average per bird for the month will be given. If this is done for each month, the yearly average can be determined. Comparing the production of your flock with the standard given below will help you in feeding more intelligently, prevent a winter moult and induce a better production.

The standard is as follows:

November	8	May	20
December	10	June	13
January	10	July	16
February	12	August	13
March	19	September	7
April	21	October	6



WITH the acute fuel problem, it is well to turn dead apple trees and limbs into firewood; there should be a sale of wood in the nearby town for fireplaces.

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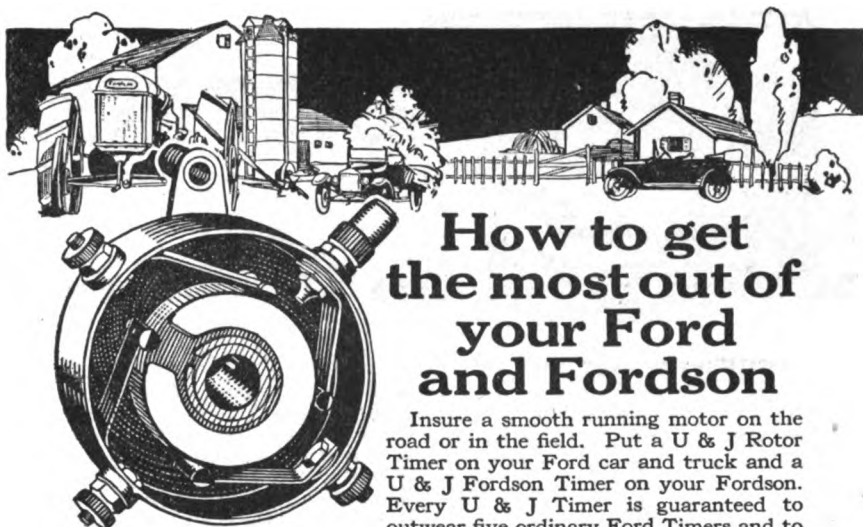
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Compressed Air Motor

To the Expert:

How much compressed air does a half-horse power compressed air motor use in an hour?—A. W., La Crescent, Minn.

Answer—To find the amount of free air a one-half horse power motor will use in one hour, take the square of the bore, times the stroke, multiplied by the revolutions per minute, times 60, divided by 1,728, and you will have the number of cubic feet of free air used. The size of the tank necessary to hold this would depend entirely on the pressure of the air is stored at.—F. M. SERVICE.



Lights From Magneto

To the Expert:

I am a reader of FARM MECHANICS and I enjoy it very much much, especially the Motor Trouble Advice.

I have a few questions here that I would like for you to answer for me. Some time ago I read in a Motor encyclopedia that an inductor type of magneto, if run at high enough speed can be used for lighting electric lamps. I would like to know at how high a speed it should be run and if there is any danger in running it at too high a speed.

I have a low tension inductor type magneto which I intend to use on a truck to light a spot lamp, so I would like to know what size bulb to use with this magneto. It is a six bar magnet magneto.

I would also like to know if this same magneto may be used to operate a vibrator spark coil.

Thanking you in advance for your answer I remain a satisfied reader of FARM MECHANICS.—D. W. H. NOECKER, Gerald, Mo.

Answer—A low tension induction type magneto will generate current at any speed from 100 R. P. M. to 3,000 R. P. M., the amount of current and its strength depending entirely on the speed of the magneto. It would be impossible to hook it up to a truck to furnish current for lights. for if the bulbs were of too

Mr. Service will answer free of charge for Farm Mechanics readers questions of general interest on Automotive troubles. As a "trouble shooter" he is probably the best equipped man in the industry, having diagnosed the ailments of thousands of automobiles, trucks and tractors. Put your troubles up to F. M. Service—Editor.

high voltage the light would be very dim at low speeds, and if the bulbs were of too low voltage, they would burn out at high speed. Therefore you can easily see that a lighting outfit of this kind is not practicable as the truck motor would constantly be traveling at different speeds.

However, if you would connect up your magneto to a 40-hour, 6-volt storage battery, being sure to install a cutout between the battery and the magneto so that the storage current in the battery could not back up into the magneto, when it was not running, you would have an outfit used on all automobiles having a starting and lighting system. Any size bulbs could be used with this battery as long as they are of 6-8.

The speed that the magneto operated at would not make any difference, as long as it operated at a high enough speed to generate enough current to store in the battery. A speed of 1,000 R. P. M. and up should do this with the type of magneto you describe. The current can also be used for the vibrator coil.—F. M. SERVICE.



More Speed for Dodge

To the Expert:

I have a Dodge truck on which I am thinking about putting a Ford one truck back end. I want more speed. Would the change mentioned give any more speed than I now have? If so, how much?

I have been a reader of your magazine over a year now, and would not think of doing without it.—R. B. M.

Answer—No, the ratio of the Ford ton truck axle is just about the same as the Dodge and their engine speeds are also very nearly the same, so nothing

would be gained by making the switch, which you would find would be of considerable expense and trouble, as you would have to rebuild the entire rear frame of the Dodge to take the Ford axle as well as the universal joint end.

You had better have some reliable gear company make you some higher speed gears to go in the Dodge axle.—F. M. SERVICE.



Tractor Leaks Oil

To the Expert:

I am operating an International 8-16 tractor which leaks the transmission oil out thru the differential gear shaft onto the right drive chain. This has become so bad as to leak about one quart per day. Can you advise me how to overcome this?—NOAH WRIGHT, Bowie, Md.

Answer—To overcome the leaking of transmission oil past the drive shaft, remove the chain and then take out the small sprocket and shaft by pulling out the cotter pin and washer on the end of the shaft. The oil retainer can then be removed and replaced with a new one, which can be gotten from the nearest International dealer.—F. M. SERVICE.



Air Compressor Design

To the Expert:

I am interested in a garage and we have made an air compressor by using a four cylinder motor. Directly in back of it we have a six cylinder motor using that as the pump. Can only get 25 pounds pressure, and then can keep on running but pressure won't go any higher. The bore is $3\frac{1}{8}$ by 5-inch stroke. Can you give us any information as to how we can remedy it?—EDW. BERG, Cascade, Wis.

Answer—The reason you cannot get any greater amount of air compression than 25 pounds to the square inch is because you have not filled in the compression spaces in the six cylinder engine you are using for a pump. To remedy this it will be necessary to make six wooden blocks that are just the size of the compression space when the piston is at top center. Of course space must be allowed in these for the valves to operate.

Bolt them directly to the top of each piston and you will be able to raise any pressure you want, providing you have the power, but you will probably find that you will have to cut about three of the six cylinders in order to have power enough from your four cylinder engine to raise a good pressure.—F. M. SERVICE.



Crankshaft End Play

To the Expert:

I am a reader of FARM MECHANICS and it is a great benefit to me, especially your Motor Trouble Advice. I now have a question for you which I have not seen answered. Please tell me how to remove the end play from a Ford crankshaft. My Ford is hard to start when cold but starts easy when warm. I have been told that the crankshaft has too much play is the cause, and also how far must the magnets be spaced from the field to be right?—JOHN H. MAJOR, Flushing, Ohio.

Answer—The end play in the crankshaft is removed by replacing the rear main bearing cap. This can be done only by removing the motor from the crankcase and disassembling the transmission from the crankshaft.

The proper distance for the magnets to be from the coil is 1-32 of an inch. If any closer than this they will strike and produce a distinct knock. We would advise you to have the voltage of the magnets tested before you tear the motor apart, as the trouble you are having may be caused by some other defect, such as a worn timer, or coil units being out of adjustment, etc. If the magneto is of the proper strength it should show from 14 to 18 volts with the motor running at about 1000 r.p.m.—F. M. SERVICE.



Tunning up a Ford

To the Expert:

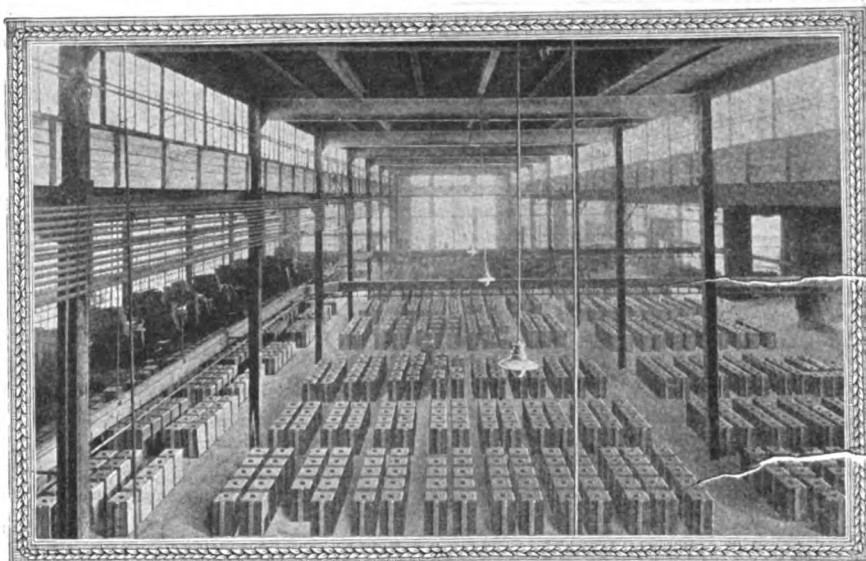
Kindly give me your advice concerning the following questions about my Ford car:

When the motor is running, especially when the brakes are not set, it tends to creep. I have loosened low speed band and adjusted the set screw on the clutch arm, which is operated by the hand lever, but without getting the desired results. Do you think I should loosen the three adjusting screws in the clutch dogs about a half turn or so?

What method of procedure is practiced to tighten main bearings in a Ford?

How can I adjust the lights or the electrical current so as to get brighter lights?

Would you advise vaseline being used



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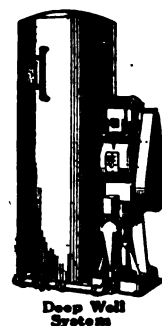
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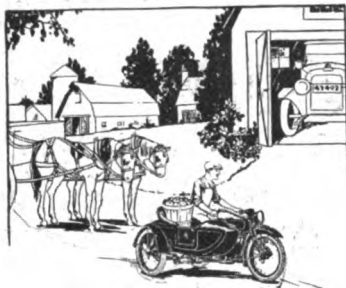
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as a lubricant in a regular Ford timer? Hard oil, or motor oil? I have used oil and grease with reasonable success, but have never tried vaseline.

Could storage battery be charged by the regular magneto on a Ford, without the use of a generator? If not, why? If so, how?

How is a main bearing, and connecting rod knock distinguished from each other and from a carbon knock, etc?—VANCE B. MYERS, Convoy, Ohio.

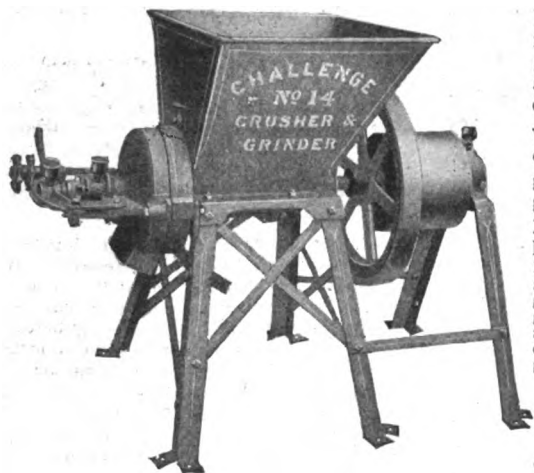
Answer.—Yes, loosen up the three set screws on the clutch dogs, one half turn, for apparently the clutch plates are dragging, due to the clutch not being entirely separated, when the lever is pulled back.

The motor must be removed from the crank case and the transmission and fly-wheel disconnected from the crankshaft by the removal of the four studs holding them. The main bearing caps can then be removed and the babbitt lining of the main bearings inspected. If they are badly worn or cracked, new ones should be installed. The crankshaft should also be lifted out of the cylinder block and the babbitt in the block examined. If these babbitts are found to be in poor condition they should be repoured and bored out. This is a job that can only be done, however, by an experienced mechanic, equipped with the proper gigs and tools for this work. If any of these bearings have to be replaced it is necessary to refit them to the crankshaft.

There are two methods of doing this. First, scraping, which requires skill with a small sharp-edged tool, known as a bearing scraper. The plan followed is to spot or locate the high spots in the babbitts by rotating the crankshaft in the bearings after first putting a thin film of what is known as Prussian Blue on the bearing surfaces of the shaft. This blue will be rubbed off on the high spots of the babbitt and these spots are then scraped down with the scraper. this being kept up until the entire surface of the bearing is an exact fit to the bearing surface of the crankshaft.

The other method is to tighten down the caps dead tight and then the block is fastened to the base of a heavy machine and the crankshaft connected up to a shaft and clutch, which is driven by a 15 to 20-horse power electric motor. This tremendous application of power to the crankshaft will break it loose of the bearings and the heat developed by the friction of the tight bearing caps will literally mould the babbitt into the exact shape of the crankshaft bearings. If, on the other hand, it is not necessary to replace any of the bearings the caps should be removed and filed down or shims removed until each bearing fits snugly to the shaft, or just

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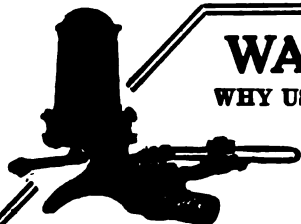
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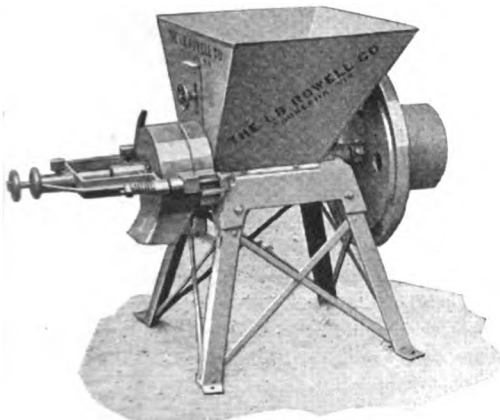
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tight enough to remove the play between the shaft and bearing.

If the lights are operated from the magneto, install 6-8 volt 24-candlepower bulbs instead of the 9-volt now used. If run from the battery purchase nitrogen 6-8 volt, 24-candlepower bulbs and a much brighter and whiter light will be had.

Vaseline is the very best lubricant that can be used in a Ford timer as it is a much purer lubricant than oil or grease.

No, a battery cannot be charged from a Ford magneto as the current generated is alternating and a storage battery will only store direct current.

A carbon knock is only heard when the motor is under a hard pull, such as climbing a hill, while a connecting rod will only knock when the load is off the motor, such as going down a hill or with the motor idling at high speed. A main bearing knock is generally a dull knock and cannot be stopped by cutting out any one cylinder and will be heard most distinctly when picking up.—F. M. SERVICE.



Oiling a Fordson

To the Expert:

I have a Fordson tractor and find I am over-oiling it. What do you recommend? —A. W. PITSBY, Albion, Pa.

Answer—You are not making the proper use of the oil cock on your Fordson. The top pet cock should be opened twice a day and left open while fresh oil is poured in the crank case thru the strainer in the breather pipe. When the oil starts to run out of the upper cock, stop pouring it in and close the pet cock.

This means that you have about 2½ gallons of oil in the motor, which is the correct amount. Under no circumstances should the oil level ever be allowed below the lower cock. Also be sure the tractor is standing level when the oil is tested.—F. M. SERVICE.



Saw for Fordson

To the Expert:

What size circular (cordwood) saw will Fordson tractor handle?—JULIUS RUTTAM, Hendricks, Minn.

Answer—A Fordson tractor will handle a 36-inch saw easily and your nearest Fordson dealer can quote you prices on both the saw and the cordwood sawing frame ready to hook up to a Fordson tractor and built especially for it.—F. M. SERVICE.



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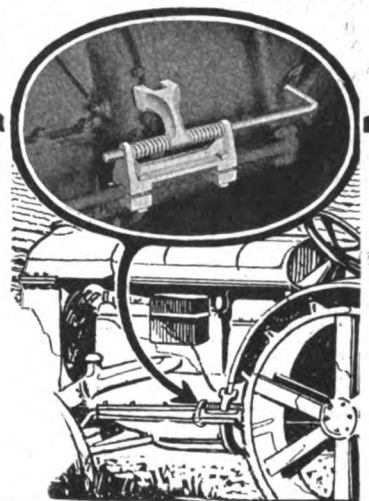
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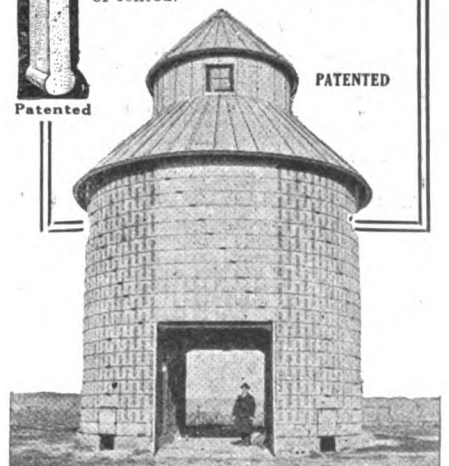
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of Veterinary Science University
of Wisconsin

EDITOR'S NOTE—Dr. Alexander will answer any question regarding diseases and treatment of livestock for FARM MECHANICS' readers. Write fully, addressing your letter to Veterinary Department, FARM MECHANICS, 1827 Prairie Avenue, Chicago, Ill.

Milk Decrease at Second Freshening

Editor Farm Mechanics:

Would like very much to have your opinion and advice regarding a cow which I own, providing it is not asking too much.

I have a pure bred Jersey cow which gave birth to a calf on the 2nd of October. This was the second calf which she has given birth to. When she was fresh the first time she produced from two gallons to two and a half gallons of milk at one milking, but this time about one gallon is as much as she will average.

Had a veterinary come and look at her, which was about two weeks ago, but she has not improved any since. He was of the opinion that it was caused from the cow eating part of the after-birth, but I do not believe that is the trouble.

She seems to be in good health every other way, eats well and runs and plays as tho she felt good, but just won't give enough milk hardly for the calf and really should be better this time than when she was fresh before, should she not?

I am feeding ground corn and oats and feeding a good amount of it, besides she was on pasture at the time the calf was born, which shows that it is not caused by insufficient feeding.

She was a heavy milker all thru the last season, gave a good amount right up until she calved. Could not turn her dry until just about a week before she calved. Has not had any fever nor been off her feet at any time. Bowels have always been in good working order apparently. The calf is a good healthy normal one.

I believe that I have given you all the information regarding the cow that I can. However, if there is any other information that you wish, please advise.

Will appreciate any advice you can give me in regards to the matter, as I have paid a good figure for the cow, and know from her past performances that she should be doing one hundred and fifty per cent better—M. F. ZIMMERMAN, Henning, Ill.

Answer—While the eating of the

afterbirth is injurious to a cow in many instances and always, if possible, should be prevented, it is much more likely that failure to produce a full flow of milk at this "freshening" was due to the fact that the cow had not "dried off" for at least six weeks before calving. Every dairy cow should be rested for at least that length of time before birth of her calf. It can be managed by keeping her off pasture, withholding rich meals and feeding dry hay, straw, corn stover and only a little bran to regulate the bowels. At the same time the periods between milkings gradually should be increased; then one of them is dropped out and again the periods are lengthened. Then, when the milk secretion has greatly diminished milking is done but once a day, then every other day and finally is discontinued when only a little milk is yielded. At the present stage some improvement may follow if you milk the cow three times daily and massage the udder thoroly each time and feed one pound of the following ration for every 3 pounds of milk produced daily. Ground barley, ground corn and flax-seed meal, of each 100 pounds; ground oats, 200 pounds. Good clover and timothy hay (mixed) 10 to 15 pounds. sound corn silage 30 to 35 pounds. If straight clover or alfalfa hay can be fed the following mixture of meals will suffice. Ground barley, ground oats and wheat bran, of each 100 pounds. Hay and silage, as already prescribed. Also allow an ounce of salt daily and provide an abundance of pure drinking water.—DR. A. S. ALEXANDER.



Care for the Sheep During Fall Months

TAKE good care of the sheep and lambs during the fall months and early winter, say the sheep men at the New York State College of Agriculture, who point out that while sheep can obtain nourishment until quite late in the season from the stubble and corn fields, they should be provided with protection from the cold rains.

This protection may be only a rough shelter in a fence corner, but some sort of protection should be provided. This will not only prevent injury to the fleeces, but will lessen the danger of colds or pneumonia developing in the flock.

It is also pointed out that it is best to keep the fleeces as free from burrs, straw, and chaff as possible, since cleaning wool is expensive. If feed racks are properly constructed the chaff problem can be solved, and the proper care of the pasture will eliminate burrs.



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Use Silage as Soon as Needed

WHAT is the best time to begin feeding silage, is a question which is interesting many dairy farmers. The specialists on livestock feeding at the New York State College of Agriculture reply that the time to begin using silage is when the dairyman needs it; they feel there is no justification for the idea that a certain time must elapse between the filling of the silo and opening it for use.

Experiments made at the state colleges of the country indicate that fermentation starts almost as soon as the corn is placed in the silo, and that the greatest change takes place during the first five days after filling. After 12 days, fermentation is practically complete, and the silage undergoes very little modification after two weeks.

Some farmers do not know that silage will keep for a long time. Experiments indicate that silage is as palatable after several years as that which has been kept only a few months.

Altho moldy silage apparently does not injure mature cows, it has been found to affect the health of calves and horses. To be on the safe side, careful farmers discard the moldy silage from the top of the silo.



Growing Bulbs Indoors

HYACINTHS, Paper White Narcissi, Chinese sacred lilies and even tulips may be grown indoors with a fair degree of success, according to the horticulturists at the University of Nebraska Agricultural College. They may be grown either in water or dirt. To grow bulbs in water, the bowl or vase should be partly filled with gravel, pebbles, coal, together with a small amount of crushed oyster shell. Then the bulbs are placed firmly among the stones, etc., partly covered with water and removed to a cool, dark part of the cellar while the roots are forming. They should be left there about 6-8 weeks, the water being changed every week. At the end of this period they are brought into the light and into a heated room to flower. The bulbs may be grown in pots also, a 6 inch pot being suitable for 3 bulbs. The pot is filled with garden soil in which a cupful of sand has been mixed and a little well rotted manure. The bulbs are set just beneath the surface of the soil, watered and removed to a cool dark moist place such as a cave or out-of-doors under a covering of dirt, straw or ashes. Here they are left for 6-8 weeks and then gradually introduced to heat.



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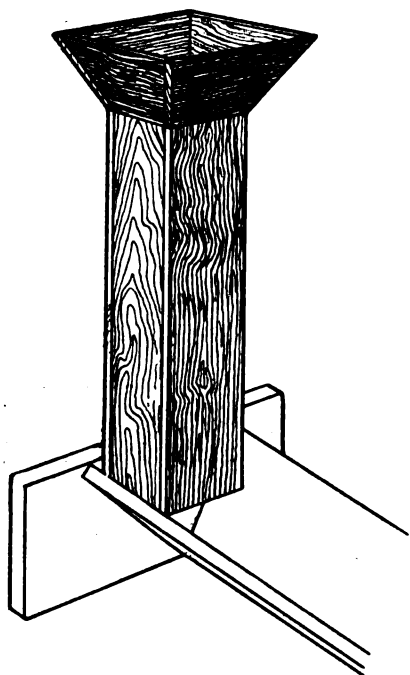
HANDY ANDY'S DEPARTMENT

WHERE FARM MECHANICS READERS CAN PASS ALONG GOOD, TESTED IDEAS.



To Fill the Trough

EVERYONE who has slopped hogs knows how difficult it is to pour the liquid into the trough with the hogs fighting for first chance at it. Here is a



Chute Attached to Hog Trough that Prevents Trouble When Pouring Out the Liquid Feed.

method we use to prevent this trouble. To any ordinary trough an upright box, 2½ feet long and 4 by 8 inches in size is attached to the trough as shown in the illustration. At the top the sides are flared so as to make a square funnel. With this box the pigs cannot interfere with the pouring and they soon learn to wait for a drink at the bottom of the spout.—J. P. VOLDEN, Corn Valley, Wis.



An Emergency Water Heater

AN EMERGENCY water heater can be made from a light bulb and a glass tumbler. Last winter our young son was afflicted with the croup for about a week. We did not care to keep a fire throuth the night and as only a little hot water was needed, it was prepared and kept handy during the night in the following manner:

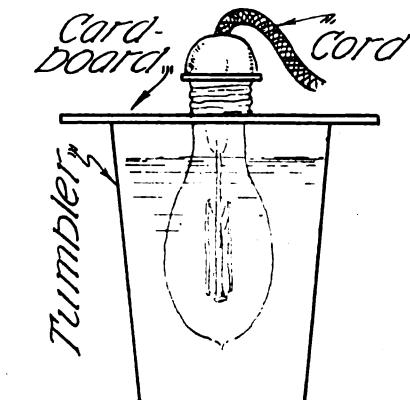
A square of stiff cardboard four inches

\$1 for an Idea

I, Handy Andy, am famous, because I am found on nearly every farm. When some little thing that would make farm work easier pops into my head I get to work and build it. Farm Mechanics has asked me to pass my ideas along, so as to help everyone do things more easily. I want to pass your ideas along, too. Send them to me, using not more than 200 words, and a pencil sketch or photograph to illustrate it. I will send you \$1 for every idea accepted. Address your letter to me.

HANDY ANDY,
Care Farm Mechanics,
1827 Prairie Ave., Chicago.

square was cut out in the center just large enough to admit the threaded end of the light bulb. This was placed on before turning into the socket on the end of the flexible cord and rested on the top of



Electric Light Bulb May Be Used for Warming Milk or Other Liquids

a tumbler when the light had been placed inside. The glass was then filled with water and the current turned on. If a small size of bulb is used the current consumption is trivial, yet the water was always hot. To keep most of the light out of the room, a dark cloth was wrapped about the tumbler.

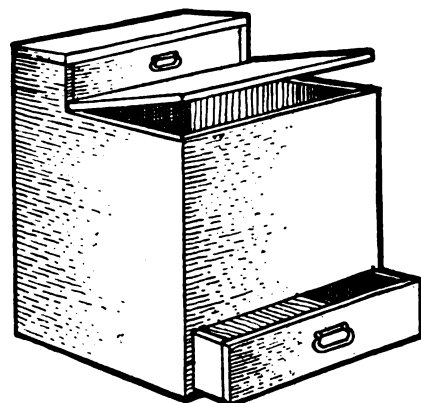
A better way might be to substitute a small earthen crock for the glass. Having thicker walls, less heat would be lost by

radiation and then no light would be thrown out into the room. The drawing shows the arrangement.—D. R. V. H.



Handy Wood Box

THE ordinary wood box may be improved by adding drawers at the top and bottom, as shown in the accompanying drawing. The upper drawer is for the storage of flatirons, stove polish and



Wood Box with Drawer at Bottom to Catch the Litter, Making It a Simple Matter to Empty It.

brushes and other articles needed in the kitchen near the stove. The lower drawer catches the sawdust and small pieces from the wood, making it a simple matter to keep the box clean. By merely taking out the drawer and emptying it, this refuse is disposed of. This is much more easy than to take the box outside when it becomes necessary to clean it.—LAWRENCE J. SEIDL, Pisek, N. D.



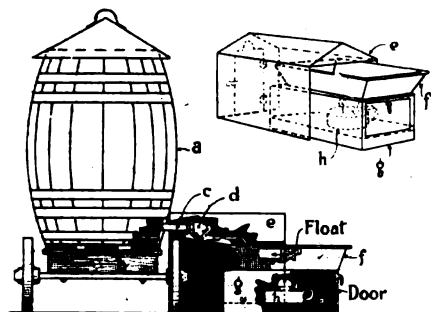
Easily Made Water Fountain

THE necessity of economizing my time in the care of my 200 fowls, prompted me to make the watering device described in this article. The fountain proved to be a complete success, saving many minutes time each day, and greatly reducing the labor of carrying water. My flock laid better than any of my neighbors'; and I attributed this largely to the bountiful supply of fresh, cool water in summer, and to the benefit of the warmed water the fountain supplied in the cold weather.

The outfit consists of a water barrel

made easily portable by being mounted on wheels, with a float valve arranged so that a watering pan is kept constantly filled from the water in the barrel.

I used four wooden wheels, 10 inches in diameter, with two short boards fastened to the axles to make the truck. The barrel was screwed firmly onto this. A second hand float-valve was screwed into a hole bored near the bottom of the barrel. The float was missing, so I soldered a small flat tin can to the end of the valve level. I made a stand of light galvanized sheet iron for the metal



Water Tank Made of Barrel with Means of Heating the Water.

watering-pan to sit on, and hinged a door in this so that I could slide in an old incubator lamp.

I fastened a bent sheet metal guard over the float valve, so the chickens could not stand on it, and I let this guard extend over the water pan so that the heat from the lamp was collected in it. This kept the valve from freezing even in severe weather. I fitted a board with dowel legs to stand in the watering pan, so that the hens could not pollute the water.

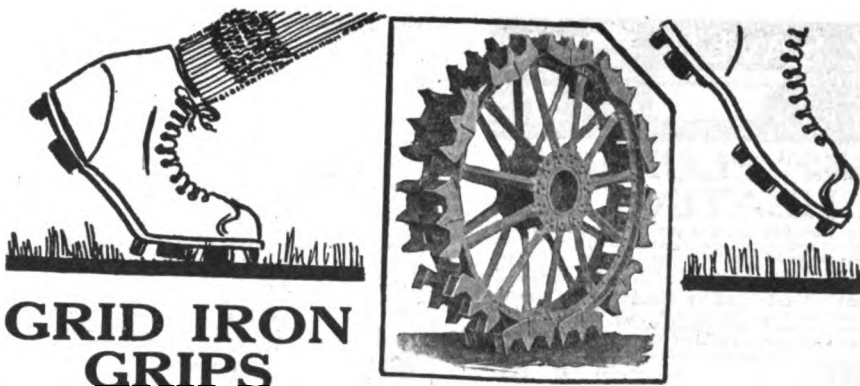
Twice a week I would roll the barrel to the pump and fill it with fresh water, then wheel it back to the watering pan. It took but a minute's time each evening to empty and rinse out the pan, and in winter I filled and trimmed the lamp when I refilled the barrel.

Poultry keepers will find their time in making one or more of these watering devices, very well repaid by the satisfaction to be had in their use.—HOMER ST. TRECARTIN, Boston, Mass.



A Rabbit Trap

HERE is a rabbit trap than any boy can make. I have several of them and have found that they will capture the rabbits every time and keep them. As shown by the illustration the trap is a box 20 inches long, 8 inches high and 6 inches wide. At one end there is a round hole for the rabbit to enter. Back of this and fitting loosely enough to slide is a door, held in place as shown. A notched piece attached to the piece that holds the door in place, catches in a hole in the top of the box. The bait is



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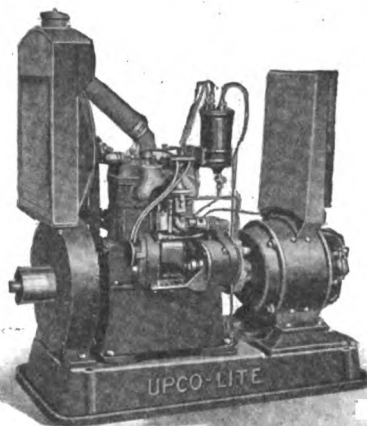
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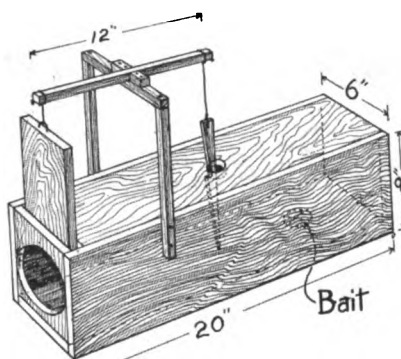
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placed just back of this notched piece. As the rabbit enters to get the bait, the size of the trap requires that he hit the



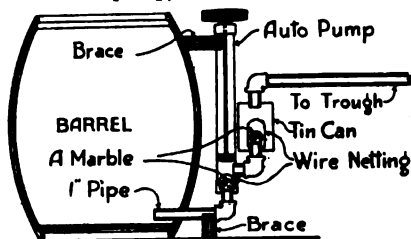
A Rabbit Trap that Is Easy to Make.

catch and disengage it, which closes the door and the rabbit is caught.—PAUL H. BAKER, Stewardson, Ill.



Liquid Feed Pump

HAVING to carry feed over a stone wall and a distance of 50 feet beyond to the feed troughs caused me to work out the device shown in the illustration. I placed a piece of 1-inch pipe about a foot long near the bottom of the feed barrel and placed an elbow on the end of it. To this I connected an old automobile pump, after making a seat in



— CROSS SECTION —

Force Pump for Forcing Liquid Feed to Hog Trough.

the top of the pipe elbow for a marble to be used as a valve. Another elbow of pipe was attached to the pump. This also had a seat in the top for a marble. Then I soldered a tin can to this piece and to another which was joined to the pipe that leads to the troughs. This outfit makes a suction and force pump and it is surprising the distance the liquid feed can be forced.—HERBERT E. WEIR, Russel, N. Y.



Wagon Livestock Frame

IN constructing a wagon frame for hauling livestock use good, strong materials and plenty of bolts and braces. For little does one realize what he will be called upon to haul. Pure-bred cattle sometimes become excited and break the frame, while old sows get their noses under the planks and up they go. The illustration shows a frame we have

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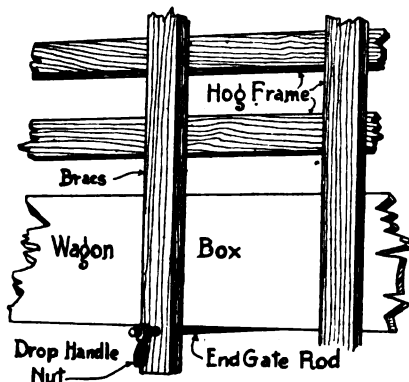
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made and it has stood up under some severe strains. In making the frame let the outside upright braces and especially the middle ones extend about three inches below the floor of the wagon. Bore a 1/2-inch hole in the braces oppo-



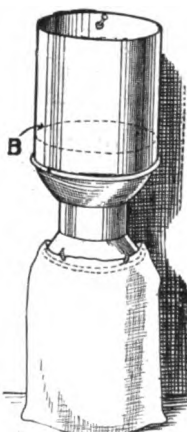
Showing How Stock Frame Is Held Rigidly in Place.

site each other, just under the wagon floor. Run an endgate rod thru these holes and draw up securely. Then there will be no danger of the animals tearing it apart and getting away.—WESLEY KEISLING, California, Mo.

A Sack Filler

MOST people who see an old 5 or 10-gallon milk can with the bottom rusted thru think it is of no value.

But I find that it will make the best sack filler for one man that can be had.



Sack Filler of on Old Milk Can.

Remove all the bottom and hammer smooth. Punch a 1/2-inch hole in the rim near the bottom to hang up by. Then punch 3 small holes in the neck of can and make 3 wire hooks or else use hog rings and clinch fast. Large belt hooks might serve. These are to hang the sacks on while filling with a bucket or scoop. If desired the can may be cut off as shown at "B".

—WAYNE TAYLOR, Marionville, Mo.

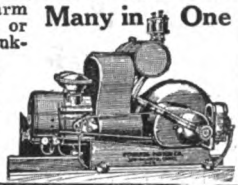
Laying 335 eggs a year at the Western Washington experiment station at Puyallup, "Lady Jewell," a White Leghorn, is claimed to be the champion hen of the station. She is owned by H. M. Leathers, of Woodland, Wash. He values her at \$2,000. Ten other hens at the station laid more than 300 eggs each.

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THE best and quickest way to learn auto mechanics and fit yourself to earn real money as a driver, repair man, trouble shooter, foreman, etc., is to start right now and learn thoroughly in 8 weeks by the

Sweeney System of Practical Experience
Sweeney Trained men are wanted everywhere. This million-dollar school has the finest equipment, the biggest investment, the most teachers, and the record of success with 50,000 graduates. I PAY RY. FARE. If you come now, I will pay your railway fare to Kansas City and give you the complete course for a special low rate.

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SCHOOL OF AUTO-TRACTOR-AVIATION
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Every Farm owner needs a copy of this handy Ropp's Calculator. Figures interest, wages, measures land, finds capacity of bins, barrels, tanks, and answers all farm problems. We send it FREE and postpaid along with our new catalog on

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The "Live Wire" farm fence. Its well crimped strand wire keeps the tension tight for years. Its rigid, picket-like stay wires prevent sagging and the Square Deal Knot never slips. Built better and lasts longer than most other. Write today — both books FREE.

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Store your oil and gasoline above or below the ground in these leakless, Riveted or Welded Steel Tanks. Made to last a life time, from best 3/16" steel plate. Underwriters label if specified. Get the benefit of lowest prices buying by mail. Write for our FREE Book on Tanks, No. ST-3.

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The wonderful newly patented Sun Automatic Spark Regulator eliminates all Timer trouble. Gives proper spark automatically for every speed of the motor. More power and greater mileage at less cost on either rough or smooth roads or when climbing hills. Prevents carbon Does away with use of spark lever. Back kick impossible. Outlasts all other Timers. Fully guaranteed. Sold on 30 days trial. Agents wanted. Splendid Profit. Auto Sun Products Co., Dept. F Cincinnati, O.

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HERBERT JENNER, Patent Attorney and Mechanical Expert, 624 F St., Washington, D. C. I report if patent obtainable and exact cost. Send for circular.

LETTERHEADS

FARM LETTERHEADS AND ENVELOPES that are businesslike. Samples free. **HOWIE**, Beebeplain, Vt.

500 BUSINESS LETTER HEADS and 250 Envelopes \$4.25. **BURNETT PRINT SHOP**, Box 145, Ashland, Ohio.

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BUZZ SAW FRAMES, Blades, Mandrels, Wood-working Machinery, Pulleys, Belting, etc., of every description. Prices way down. Prompt shipments. Catalog free. **GEO. M. WETTSCHURACK**, LaFayette, Indiana.

FOXES

BUY SILVER FOXES, \$5 monthly. **SILVERBAR ASSOCIATION**, 143K Dracut, Mass.

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TOBACCO. KENTUCKY'S NATURAL LMAF mellow smoking, 10 lbs. \$2.25. Hand picked chewing, 8 lbs. \$1.00. Free recipe for preparing. **WALDROP BROTHERS**, Murray, Ky.

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FULL BARREL LOTS Slightly Damaged Dishes, Crockery, Hotel Chinaware, Cook-ware, Aluminumware, etc., shipped direct from factory to consumer. Write us. **E. SWASEY COMPANY**, Portland, Maine.

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TYPEWRITERS—All standard makes, \$10 up. Fully guaranteed. Free trial. Write for illustrated Bargain List. **NORTHWESTERN TYPEWRITER EXCHANGE**, 320 Goethe St., Chicago.

FOR AUTOMOBILES

STOP THAT KNOCK. The Jiffy Automatic Connecting Rod Bolt insures a quiet-running motor. It increases the life of your car and saves many dollars in repair bills. No mechanical ability required to install—any one can do it. For Ford, Chevrolet, Overland, Studebaker, and other small cars. Money back if not satisfied. Price, \$3, postpaid, for set of eight. **ILLINOIS SUPPLY CO.**, 1875 E. 71st St., Chicago, Ill.

AUTOMOBILE OWNERS, garagemen, mechanics, send today for free copy of this month's issue. It contains helpful, instructive information on overhauling, ignition troubles, wiring, carburetors, storage batteries, etc. Over 120 pages illustrated. Send for free copy today. **AUTOMOBILE DIGEST**, 648 Butler Bldg., Cincinnati, Ohio.

TIMERS

FOR EASY STARTING and Long Service Guaranteed on Ford Cars and Fordson Tractors—Use a Nelson Ball Bearing Timer. Send \$3.50 to **NELSON TIMER CO.**, 610 East Water St., Milwaukee, Wis.

MOTORCYCLE PARTS

USED PARTS for all motorcycles cheap. State wants. **SCHUCK CYCLE CO.**, 1922 Westlake, Seattle, Wash.

FARMS WANTED

GOOD FARM WANTED—Send description and price. **JOHN J. BLACK**, Chipewa Falls, Wis.

CASH BUYERS want farms, spring delivery. Describe, state lowest cash price. **R. A. MCNOWN**, 362 Wilkinson Bldg., Omaha, Neb.

WANT TO SELL YOUR FARM? Write description and price. **J. WHITE BROWN**, Iowa City, Iowa.

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FREE—Formula Catalog. **LABORATORIES**, Boylston Bldg., Chicago, Ill.

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DETECTIVES EARN BIG MONEY. Excellent opportunity. Travel. Experience unnecessary. Particulars free. Write, **AMERICAN DETECTIVE SYSTEM**, 1968 Broadway, N. Y.

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AMBITIOUS men, write today for attractive proposition, selling subscriptions to America's most popular automobile and sportsman's magazine. Quick sales. Big profits. Pleasant work. **DIGEST PUB. CO.**, 9648 Butler Bldg., Cincinnati.

\$35 WEEK—Boys—Men—Become automobile experts. Learn while earning. Write **FRANKLIN INSTITUTE**, Dept. L423, Rochester, N. Y.

AGENTS WANTED

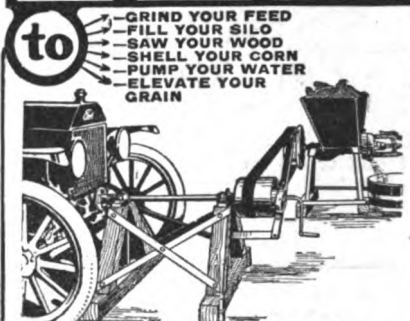
AGENTS—\$6 to \$12 a Day EASY. 250 lightweight, fast selling, popular priced necessities, food flavors, perfumes, soaps, toilet preparations, etc. Agent's outfit free. Write today—quick—now. **AMERICAN PRODUCTS CO.**, 7938 American Bldg., Cincinnati, Ohio.

RADIO AND ELECTRICAL SUPPLIES

RADIO AND ELECTRICAL SUPPLIES. Send for free Monthly Bulletin. Everything electrical, from push buttons to farm lighting plants. **HOLMES ELECTRIC CO.**, Dept. B, Libertyville, Ill.

USE THE QUICK SALES DEPARTMENT—It Pays \$ \$ \$ and Pays Big. \$ \$ \$

Use Your Ford!



Why Buy An Engine When the Ward Work-a-Ford

can be used with your Ford for all belt work? Your Ford has a powerful engine. It will outlast the car and you might as well use it and save your money. Only the engine works. No wear on tires or transmission. Just drive up and hook on in 3 minutes. Friction Clutch Pulley, Ward Governor gives perfect control. Write for circular and new low prices.

WARD MFG. CO., 1040 Hearst Bldg., CHICAGO

Salt, Lime and Iodine Need in Stock Rations

"**SALT**, iodine and calcium are needed in every well balanced livestock ration," declared E. B. Hart, of the agricultural chemistry department, University of Wisconsin.

"Salt is an essential factor in a well balanced ration," declared Mr. Hart. When used it is usually in the form of ordinary salt or sodium chloride. The chlorine upon entering the stomach forms hydrochloric acid and this acid is necessary for proper and complete digestion. The animal with a roughened coat is one which is not receiving proper nutrition and this improper nutrition may sometimes be traced to a lack of salt in the ration.

"Nearly all common food stuffs are very low in iodine content," said Mr. Hart. "The greatest loss resulting from a deficiency of iodine is in the birth of hairless pigs. The goiter region of this country is in the northwest and it is in this section that high losses are incurred. The fact that it has not put in an appearance on your farm does not necessarily mean that it never will," he continued. "And a little iodine in the form of sodium or potassium iodide will serve as an insurance against trouble of this type.

"Calcium is being given off constantly in the form of salts in the milk of a dairy cow, and some provision must be made to replace this," said Mr. Hart. "It has been found that alfalfa hay cured under caps carries a vitamin which aids in calcium assimilation. Lime or bone meal added to the roughage will also help overcome the constant drain on the calcium supply of the body."



CLEAN lots can't carry contagious conditions.

Rock Phosphate Best on Unlimed Soils

FIELD tests that have been carried on in Kentucky for a number of years to help farmers get bigger crop yields prove that rock phosphate is one of the best sources of phosphorous for thousands of acres of unlimed soils in Kentucky, soils and crop specialists at the College of Agriculture say. Results from this material have been especially good on coal measure soils in the western part of the state and on the Waverly soils bordering the bluegrass region. Soils in both these regions have little or no natural limestone in them. On the coal measure soils the average crop yields have been eight per cent greater from raw rock phosphate than from acid phosphate when the same outlay of cash for fertilizers was made in both cases.

On the field maintained by the Kentucky Agricultural Experiment Station at Greenville to represent thousands of square miles of territory in the western coal fields, raw rock phosphate has made the yields of corn, wheat and soybeans one-fourth larger than they were when no treatment was given the soils. The yield of clover on this field has been more than doubled by use of the rock phosphate. This field gets an application of 1,600 pounds of raw rock phosphate an acre once every four years.



New Use for Skimmilk

THE market for skimmilk has not been injured by the recent action of the Wisconsin supreme court is prohibiting the manufacture and sale of filled milk.

K. L. Hatch, assistant director of the agricultural extension service at the Wisconsin College of Agriculture, working in conjunction with commercial concerns in Milwaukee, has developed a process whereby the skimmilk is reduced in volume five to one by the use of an ordinary vacuum pan or concentrator. It is then mixed with an equal volume of good feed for young stock. This mixture is dried in a grain dryer of the type used for drying brewers' or distillers' grains. In this form it is sacked and ready for use.

The new mixture is being fed in an experimental feeding trial at the University of Wisconsin by F. B. Morrison of the animal husbandry department. The experiments are being watched with more than usual interest by farmers, feed manufacturers and dealers.



Work for Farm Tractor

GRINDING feed, sawing wood, hauling manure, and shelling corn, are the jobs suggested by F. W. Duffee of

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NOTICE TO ADVERTISERS

Forms for the January number of Farm Mechanics will close promptly December 15. New Copy, changes and orders for omissions of advertisements must reach our business office, 1827 Prairie Ave., Chicago, not later than the above date. If new copy is not received by the 15th of the month preceding date of publication the publishers reserve the right to repeat last advertisement on all unexpired contracts.

FARM MECHANICS.

the agricultural engineering department, University of Wisconsin, for the tractor during the winter.

If an all winter's job is wanted for the tractor, it can be used to run a feed grinding machine—this, of course, would be of no value to the farmer who is not feeding quite a large herd.

"We do not urge the farmer to use his tractor during the severe cold weather, due to the trouble which will be experienced in starting, and the difficulty of keeping the tractor properly lubricated," says Mr. Duffee.



Potatoes bring 80 cents a pound at Aden, Arabia, the supply coming from Ireland, as no vegetation grows at this place. Tomatoes are sold at the same price as potatoes, while sweet potatoes and onions are 60 cents a pound. Spinach is a luxury, selling for \$1.10 per pound. The vegetables are transported to the city by camel caravans, and find a market with the British troops stationed there.

Tomatoes grow wild in the Manuel and Columbus districts of Mexico and several enterprising Americans have set about taming them, expecting to export the vegetables to this country. The soil is black loam and dry farming methods are used.



REPORTS from Washington show that 159,820 American farmers selected seed corn last fall. Would there have been only 159,819 if it hadn't been for you?



BUSINESS methods are as essential to success in dairying as in any other manufacturing enterprise. Dairy improvement association members realize that testing isn't a novelty, but a necessity.



VENTILATION, cleanliness, green food, plenty of room and water are five powerful allies that help Mrs. Biddy fill the egg basket these days.

When the Baby Laughs—

YOU are being advertised to. When the sun shines, when the flowers bloom, when dinner sends out its inviting aroma—when any one of a thousand things happen to attract your attention, you are being advertised to.

The purpose of any advertisements is to attract your attention and arouse your desire; to tell you what is new and good; to guide you to something you ought to have; to make you happier and more comfortable; to save you money and make life easier for you.

So, read advertisements. They will give you the latest ideas and improvements. They will help you to live better and dress better at less cost.

You'll be surprised at the world of interest and the wealth of new ideas that you'll find in reading the advertisements in this publication.

Advertisements are daily records of progress. They are the reports to you of manufacturers who work for you, telling what has been accomplished for your benefit. Take advantage of them.

Don't let an issue leave your hands without reading the advertisements

FARM MECHANICS
CHICAGO ILLINOIS



And They Never Will

"That man stays to an unearthly hour every night, Gladys," said an irate father to his youngest daughter. "What does your mother say about it?"

"Well, dad," Gladys replied, as she turned to go up-stairs, "she says that men haven't changed a bit."



Stagnation

"Have the various conferences you participated in been of any benefit?"

"Yes," replied Senator Sorghum. "Anything that prevents monotony is a help, and they provided a lot of people with some place to go and something to talk about."—Washington Star.



Right and Wrong

"There are two sides to every question," proclaimed the sage.

"Yes," said the fool, "and there are two sides to a sheet of flypaper, but it makes a mighty big difference to the fly which side he chooses."



Relativity

"Darling," he cried in vibrant adoration, "I will lay my fortune at your feet!"

"Your fortune is not a very large one," cooed the damsel.

"No, but it will look large beside your feet!"

He won her.—Tit-Bits.



Her Move Next

A love-smitten youth who was studying the approved methods of proposal asked one of his bachelor friends if he thought that a young man should propose to a girl on his knees.

"If he doesn't," replied his friend, "the girl should get off."



A Cheerful Kitchen

THE kitchen should be as attractive as possible, and should have a color scheme. Curtains, flower pots, bright bows, a gay market basket, or whatever will make the place enjoyable to work in, are desirable. Light colors such as tan, warm gray, pale yellow, or grayish-green are best for painting the walls and the woodwork, since they have a practical value in reflecting and distributing the light both by day and by night.

PUBLICATION
OFFICES
CHICAGO, ILLINOIS

FARM

JANUARY
1923

PRICE 20 CENTS
PER COPY

MECHANICS

TITLE REGISTERED, U. S. PATENT OFFICE

A Monthly Magazine Featuring Farm Improvements
Machinery, Equipment, Farm Buildings



REAL TRACTOR PROGRESS!

22 Improvements Based on 22 Years' Experience

You get more for your money in a Hart-Parr "30"—the time-tested tractor that has scooped 22 major improvements for 1923. Study the Hart-Parr before making a tractor investment, and learn why thinking farmers are buying this tractor. Dealers everywhere. Write us!

Hart-Parr Co. 656 Lawlor St. Charles City, Ia.

The Bear Tractor

Compare These Features with Those of Any Other Tractor



25-35 \$4250

Light Weight

5,500 lbs. net; 6,000 lbs. with fuel, oil and water—3.5 to 3.9 lbs. ground pressure per square inch—2 tons lighter than competing tractors.

Extreme Compactness

Over-all dimensions: 118 inches long; 60 inches wide; 54 inches high; 6 feet turning radius. The accompanying illustrations of the Bear Tractor—to the left and below—show its extreme compactness.

Once-a-month Oiling

Oiled throughout from reservoirs—no waste of time each day with "greasing up"—not a grease cup on the tractor.

Remarkable Drawbar Horse-Power

80% of the engine's power is delivered at the drawbar, actually available for pulling—an efficiency never before equalled.

Compensating Track Roller System

This system equally distributes the weight of the tractor so that the track conforms to the irregularities of the ground, and maintains uniform traction. Observe this feature in the picture.

Heavy Duty Engine

Heavy duty, valve-in-the-head engine—made especially for hard tractor work—its 2 $\frac{3}{4}$ -inch crank shaft of chrome nickel reflects its quality.

Steel Cable Drawbar

A resilient drawbar! Attached to the track frame forward of center and below center of gravity—pulls down in front and increases traction.

Ball Bearings Throughout

Here's one reason for so little waste of power in the Bear—annular ball bearings—36 of them! No plain bearings and no adjustments.

Welded Fuel Tank

The fuel tank is welded—not riveted—and is non-leakable. It holds 42 gallons. The fuel line is of airplane metallic hose.

Great Flexibility

The flexibility of the Bear is shown by the accompanying pictures. The extreme ranges of the Oscillating Bar and the Compensating Track Rollers give the Bear a mobility heretofore not approached.

No-trouble Track

Of all the exclusive features that make up its excellence, perhaps none distinguishes the Bear more than the Bear Track—it causes so little trouble and so little expense. It is adjusted by a single lever.

Easy Control and Comfortable Seat

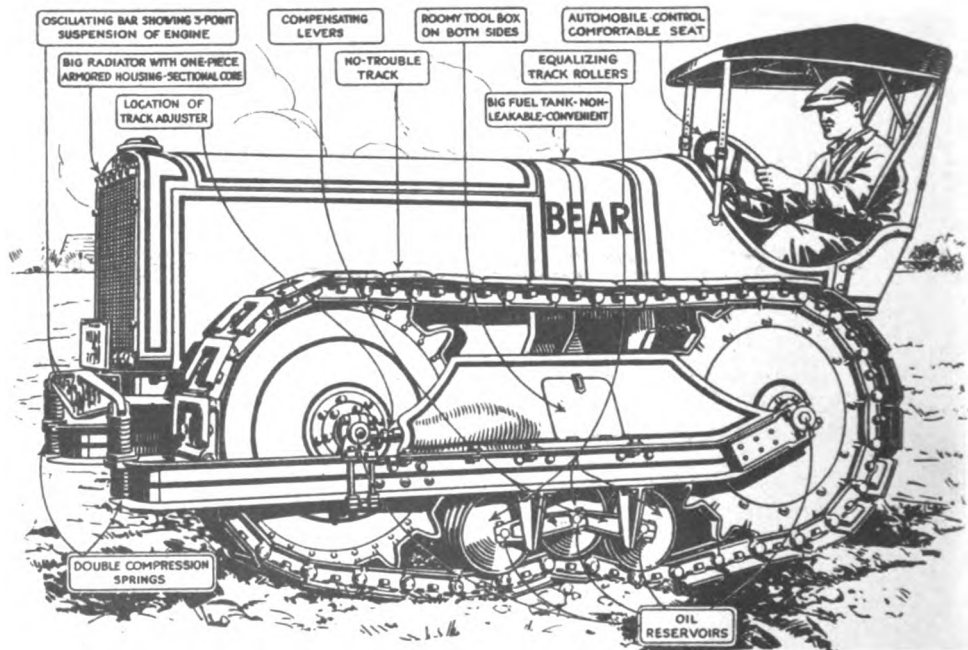
It is as easy to operate a Bear Tractor as an automobile—and equally comfortable. The control is essentially the same as on a standard car.

Every tractor distributor, dealer and user should send at once for catalog. Distributors and dealers are invited to ask regarding open territory. Franchises are being let rapidly.

BEAR TRACTORS INC.

5314 PARK PLACE

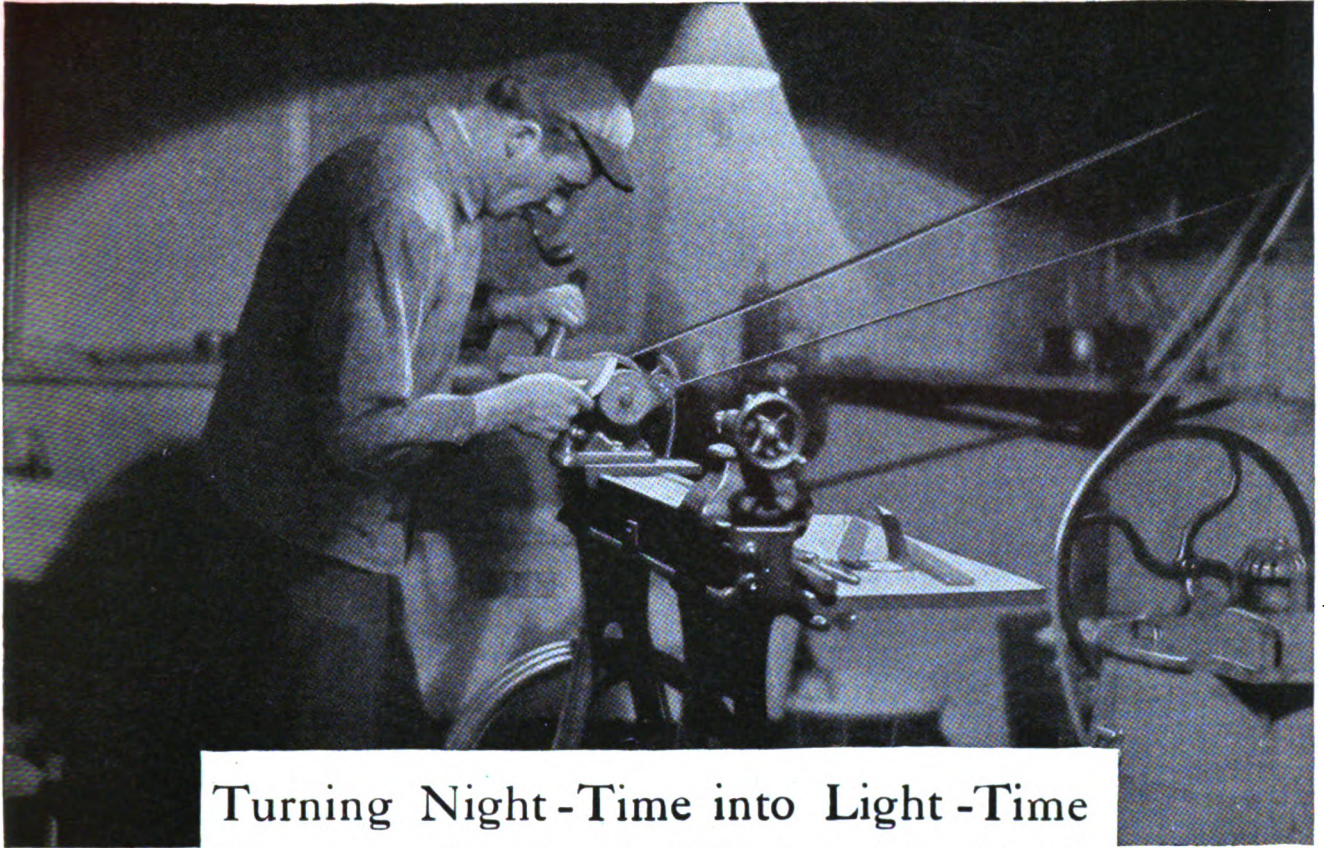
NEW YORK CITY



Booths 194-195

The Tractor that Delivers its Power to the Drawbar

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Turning Night-Time into Light-Time

You can have a real workshop and make profitable use of the long winter evenings when the Kohler Automatic comes to work for you.

A ceiling light chases away the troublesome shadows. A drop light over your bench enables you to see to do close, accurate work. Motor power for lathe or grinder makes hard jobs easy.

Meanwhile, upstairs, there is light and cheer in the kitchen. In the sitting room the children are studying without hurting their eyes.

And somewhere about the place the

Kohler Automatic is quietly and economically delivering its 110 volt current (direct—unhampered by storage batteries): is placing at your service its ample 1500 watt capacity (2 electrical horsepower): is starting or stopping automatically whenever you turn a switch.

No other power and light plant can match what the Kohler Automatic does. Learn more about it. Write us for descriptive booklet No. 85 for details of convenient payment plan, and for name of nearest Kohler dealer.

KOHLER OF KOHLER

Kohler Co., *Founded 1873*, Kohler, Wis. *Shipping Point*, Sheboygan, Wis.

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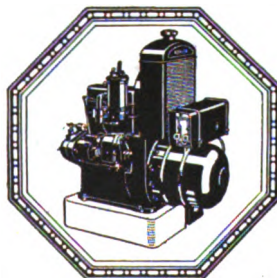
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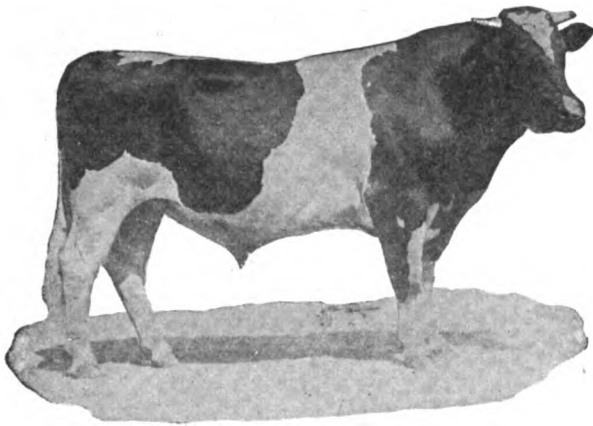
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KOHLER AUTOMATIC POWER & LIGHT

110 VOLT



D. C.



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Only four years old and the sire of 9 daughters, all of which made better than 20 lbs. of butter in 7 days as two-year olds, including PABST CREATOR VIRGINIA ROSE, 26.70 lbs. butter from 487.0 lbs. milk at 2 years, 2 months, 9 days.

The following sons of Creator are the oldest we have left:

Ear Tag 568—born March 8th, 1922. Dam a 26-lb. daughter of Chimacum Spring Farm King Pontiac, who has two daughters over 1,000 lbs. of butter as four-years olds and 25,000 lbs. of milk and two over 30-lbs. of butter in seven days under full age. The calf is more white than black. Good all over describes him fully. Price.....\$400.00

Ear Tag 569—born March 9th, 1922. Dam a 26-lb. daughter of the 39-lb. bull, Pabst King Pontiac Lad, with a good 305 day four-year old record. The calf is more white than black, absolutely straight. Price.....\$350.00

Ear Tag 565—born 2/27/1922; dam a 25-lb. 4-year old daughter of King Pontiac Champion. She is a full sister to Pabst Goldenrod, 37 lbs. butter 7 days and 1139 lbs. butter 365 days. She is a good prospect for large yearly record also. Calf is more white than black. Straight. Price.....\$300.00

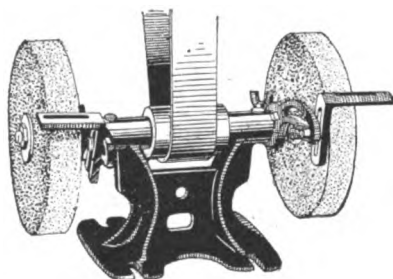
Ear Tag 566—born 3/2/1922; dam a 25-lb. junior 4-year old daughter of Matador Regis Walker, now on year test making 700 lbs. butter from about 17,000 lbs. milk. Calf mostly black. Excellent individual. Price.....\$300.00

A wire will reserve one of these bulls for you

PABST STOCK FARM, OCONOMOWOC, WISCONSIN

Herd under Federal Supervision
Last test 100% Clean

Special Power Grinder For Farm or Shop



(No. 306)

Retails for
Only

\$7

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If your dealer can't supply you, we will send one No. 306 prepaid upon receipt of \$7.

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MILWAUKEE, WISCONSIN**

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FARM MECHANICS

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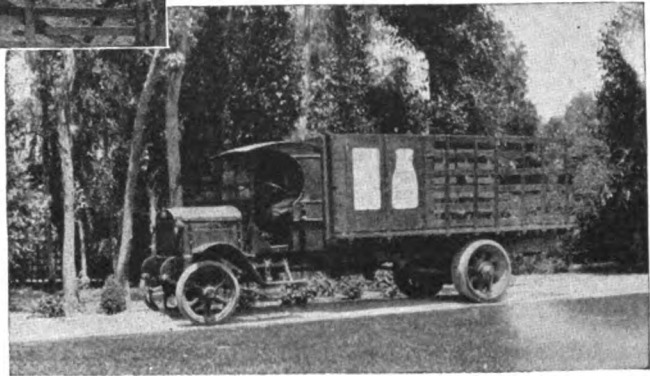
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General Motors Trucks



GMC truck used by the Arden Dairy Company of El Monte, Calif. to haul milk to Los Angeles.



GMC Helps Haul Milk From Herd of 350 Cows

Throughout the Los Angeles territory "Arden Certified Milk" is recognized as the last word in purity and food value. That this reputation is justified is shown in the fact that a bottle of Arden milk was sent across the continent to a New England fair, and there took the prize over the finest milk there.

The Arden Dairy is a large institution, milking about 350 Holstein cows and handling the product by the most improved mechanical methods. Yet this tremendous institution, representing the maximum of efficiency in all its branches, maintains this herd of milk cattle without pasturage facilities of any sort.

The location of the dairy, at El Monte, is some twenty miles distant from Los Angeles, from which point the bottled certified milk is distributed. Two trucks, one a GMC two-ton, are the transportation media for the institution.

By the use of this motor equipment the dairy is enabled to make schedule deliveries of its milk to the city twice each day and to bring from the markets all the supplies necessary for the feeding of the cattle and the operation of the place.

Just what part the trucks, and particularly the GMC play in this operation, is told by Mr. E. B. Carter, president of the company:

GMC Costs Less to Run

"At present we are operating only one GMC truck. However, I do not think it will be long before we are operating the second, because our other truck is getting worn out and the drivers will not be satisfied until it is replaced with a GMC.

"Although the other truck had given us good service, we decided to purchase a GMC for our second, when we learned that we could secure fully as great efficiency at a considerable saving over the other make. Since the time of our purchase, three years ago, the two trucks have been running side by side in the same class of work, but we are frank to say that we have heaped the loads a little higher and used the GMC a little more than the

other, and yet the showing in operation costs are all in its favor.

"Twice each day we load the trucks to more than capacity and send them into Los Angeles, which is the center of distribution for our milk. On the return trip they bring back a load of empty bottles and cases, and supplies for the ranch. You see we do all feeding on a mixed ration basis and there is no pasturage.

Carry Loads Both Ways

"The job of supplying such an institution as this with feed and other things, from a market twenty miles distant, is quite a job in itself, but the possibility of operating our trucks with a full load in both directions is one of the things that makes for economy and helps our earnings.

"Our GMC truck has given us excellent service ever since, and, as I say, we shall probably be purchasing another one soon, which is about the best recommendation we could give as to our satisfaction."

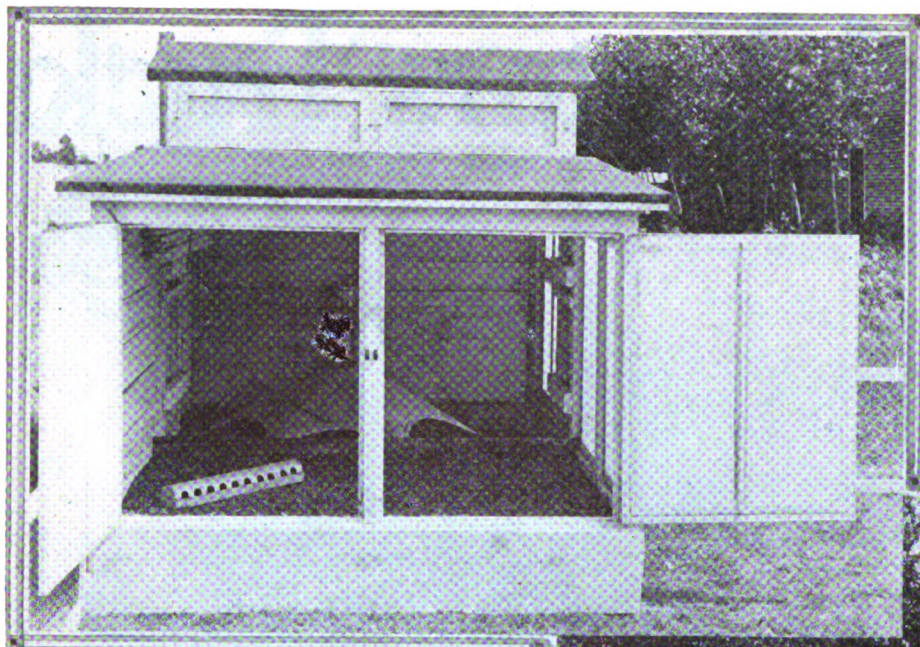
GMC chassis list at the factory as follows: one ton, \$1295; two ton, \$2375; and three and one half ton, \$3600; five ton, \$3950; tax to be added.

GENERAL MOTORS TRUCK COMPANY

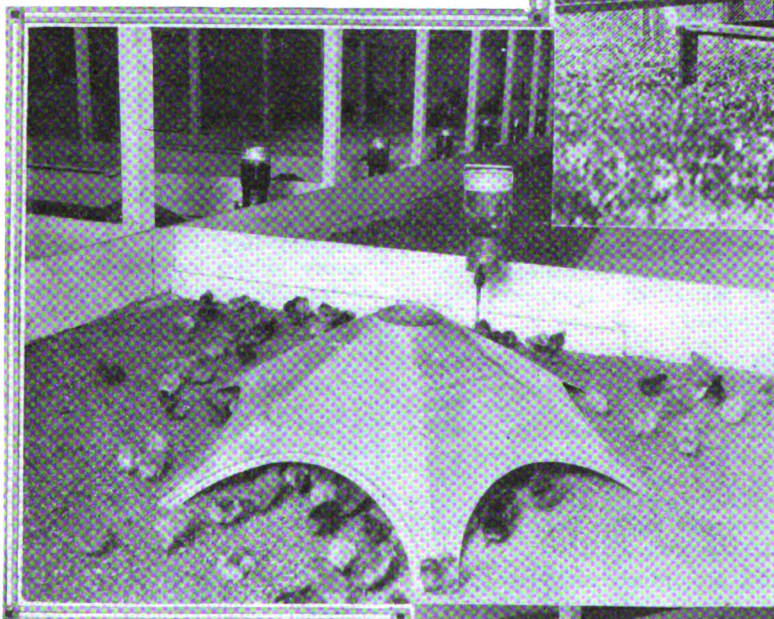
Division of General Motors Corporation

PONTIAC, MICHIGAN

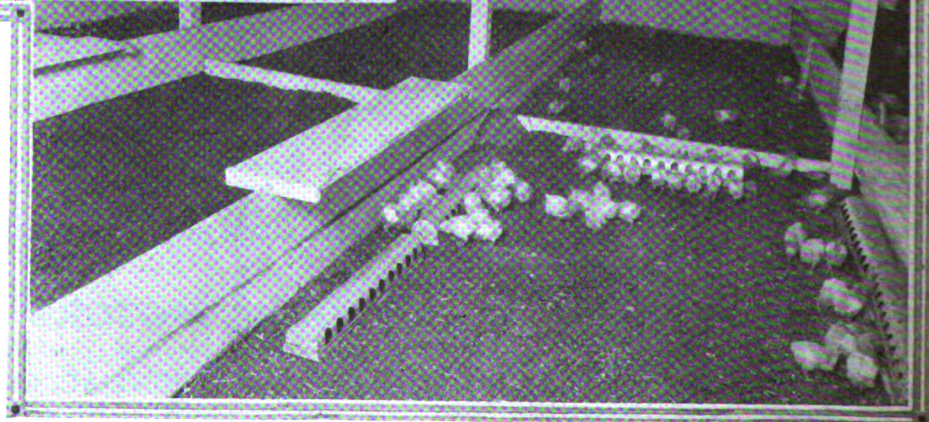
Dealers and Service in Most Communities



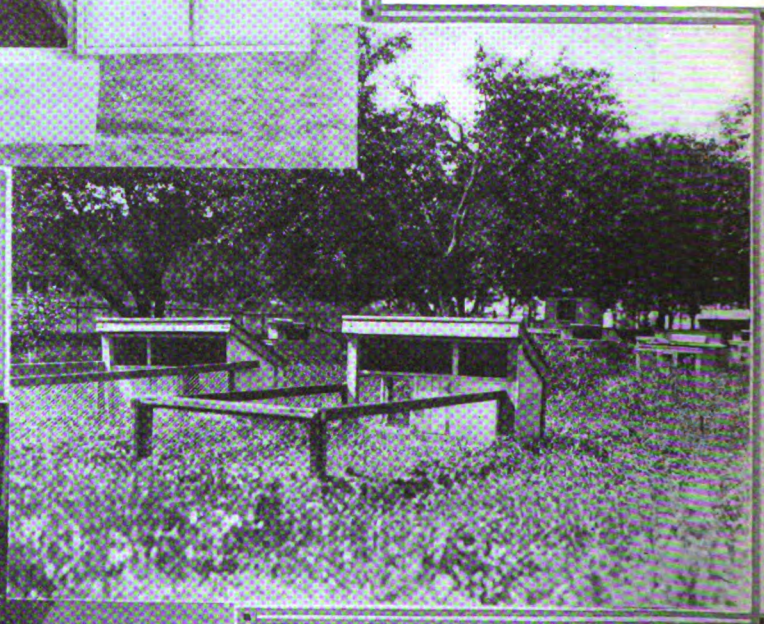
BROODER HOUSE. Above is a small brooder house with the doors open to show the brooder heater and the self-feeder. This is a small but efficient house for the young chicks.



CHICK BROODER AND INCUBATOR HOUSE. Above is a close-up view of a good chick brooder and heater. At the right is a view of the interior of a modern incubator house, showing how the pens are divided and the self-feeder equipment.



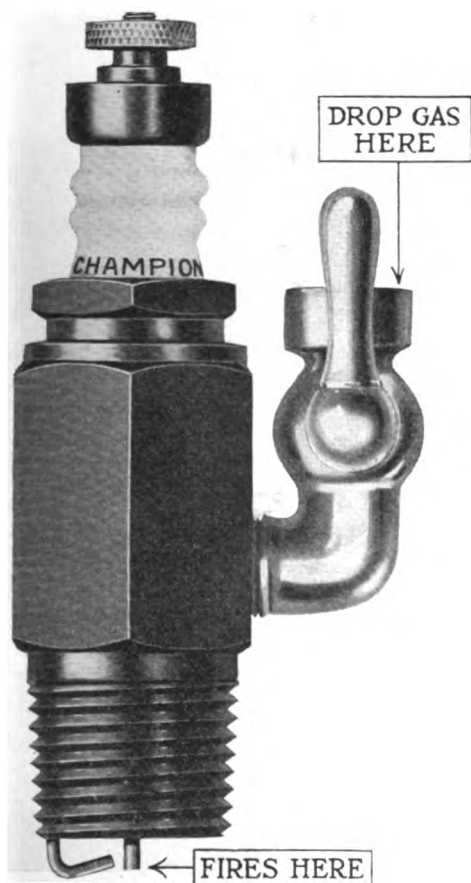
MOTHERING YOUNG CHICKS. It is approaching the season when the incubator is set to working and the young chicks will soon be making their appearance. On this page are four pictures showing how operations are conducted in large establishments.



RUN FOR THE CHICKENS. Above is a small shelter house and chicken run. This can and should be moved to fresh ground every few days, so that the chicks will be healthy.



Dependable **Champion** PRIMING PLUGS



Price \$1.00
Sizes $\frac{1}{2}$ and $\frac{3}{8}$ inches

are Time and Battery Savers.

They are a necessity for cars not equipped with priming cups and a decided advantage for cars with ordinary priming cups which deliver the gasoline too far from the spark plug.

With these plugs, starting a cold motor is positive because the gasoline must go right where the spark is—at the firing point—and less gas is needed.

An actual necessity on the Farm for Stationary Engines, Pumps, etc.

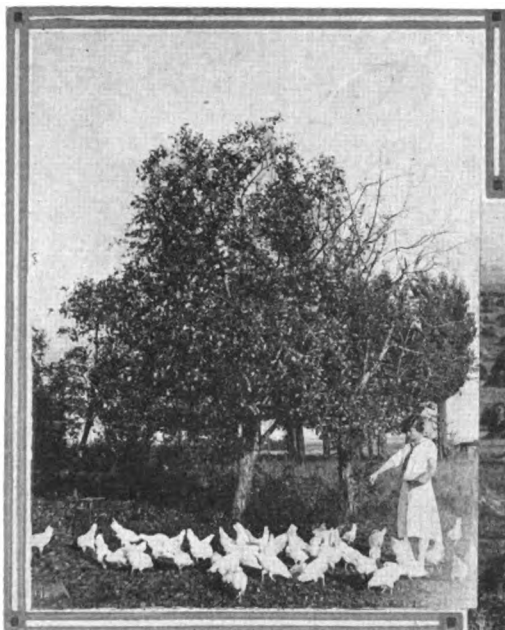
Sudden changes in temperature, damp or cold weather will cause you no delay after you have your engine equipped with

CHAMPION PRIMING PLUGS

NEARLY A MILLION IN USE GIVING SATISFACTORY SERVICE

Ask your Dealer to sell you a full set

CHAMPION SPARK PLUG CO., Toledo, Ohio



FEEDING THE CHICKENS. Even a small flock of chickens brings ready money into the farm home.

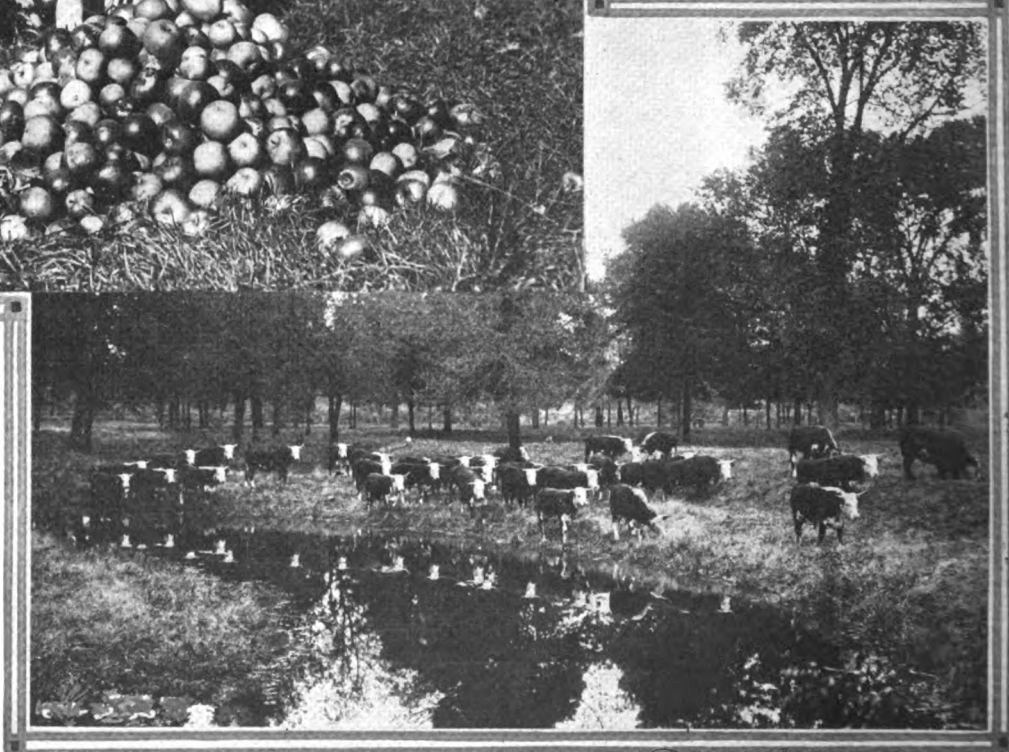


MILES OF WHEAT FIELDS. Harvest time brings scenes of plenty in the wheat growing sections. The picture below shows an unusually heavy stand of wheat cut and in the shocks ready for the thresher.



SOME "PIPPINS." There was a bumper crop of apples this year and all the members of the family turned out to help harvest them. The picture at the left shows harvesters at work.

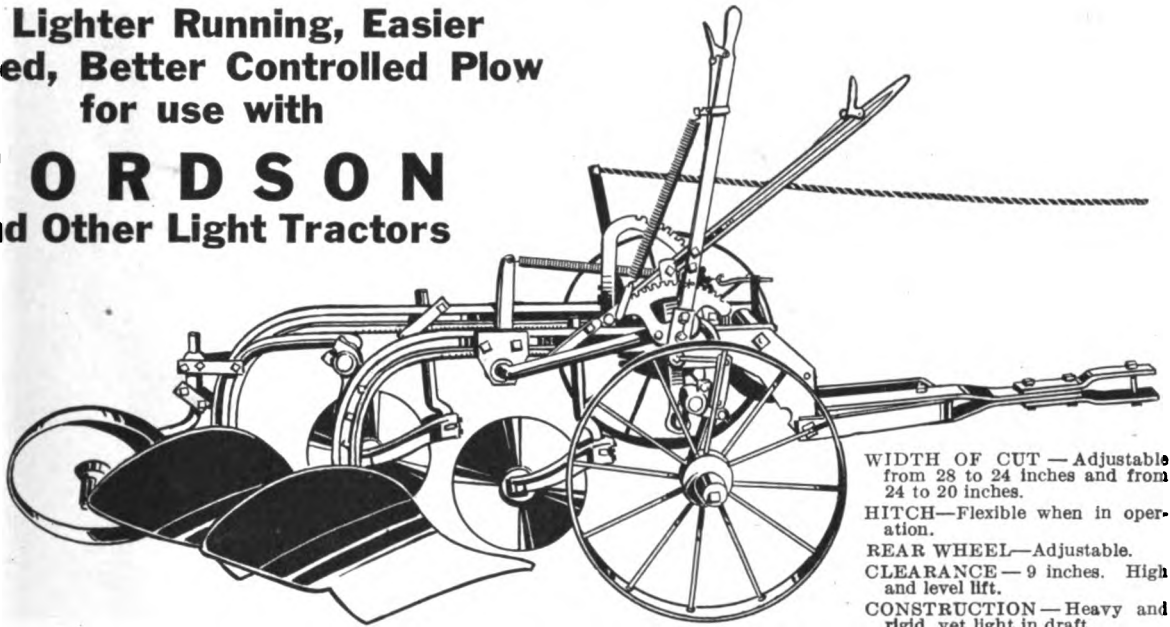
HEREFORDS AT IOWA STATE COLLEGE. Here are some whitefaces in pasture at the Iowa State College. A pretty serene and an unusual picture. Turn it bottom side up and see the reflections of the animals in the water.



LA CROSSE NO. 12

**The Lighter Running, Easier
Operated, Better Controlled Plow
for use with**

FORDSON
and Other Light Tractors



Note the following exclusive features:

Plow is adjustable to cut 10, 12 or 14 inch furrows.

Allows adjustments to varying soil conditions, eliminates loss of time and undue strain on equipment.

Hand lift device enables operator to lift plow to full height when tractor is not in motion. Thus clearing the ground about 9 inches and insures against stalling tractor when plowing in wet and heavy soil.

Adjustable rear wheel throws weight of plow and pressure of furrow slice on wheel rather than on landside, insuring light draft and uniform furrows.

Depth and leveling levers are within easy reach of operator. Not necessary to get off the seat to make either adjustment.

Special design flexible hitch keeps plow in uniform depth even when traveling over uneven ground.

Your tractor will do a better job of plowing with less trouble for the operator if you use a La Crosse No. 12 Plow.

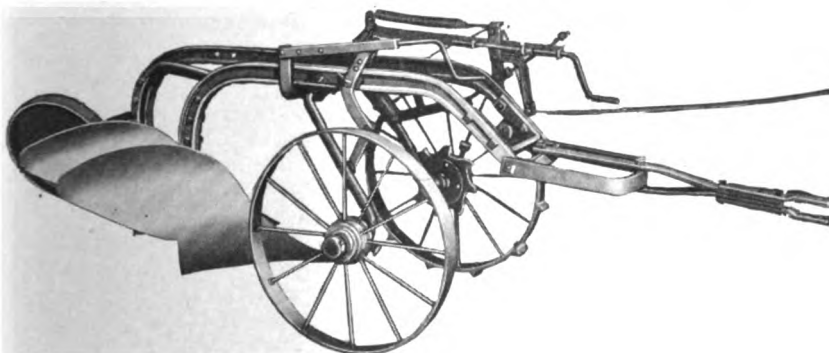
WIDTH OF CUT—Adjustable from 28 to 24 inches and from 24 to 20 inches.
HITCH—Flexible when in operation.
REAR WHEEL—Adjustable.
CLEARANCE—9 inches. High and level lift.
CONSTRUCTION—Heavy and rigid, yet light in draft.
POWER LIFT—Positive and quick acting.
PATENTED HAND LIFT—Operator can raise the plow full height out of the ground when tractor is not in motion.
WEIGHT—700 pounds.

DEALERS

La Crosse offers you a full line of tillage tools and drills for the Fordson. One make—one quality. Each superior in its field. This feature of the La Crosse agency permits saving in freight through carlot shipments without excessive investment in any one line of tools.

LA CROSSE PLOW CO. La Crosse, Wis.

"MAKERS OF LIGHT DRAFT PLOWS"

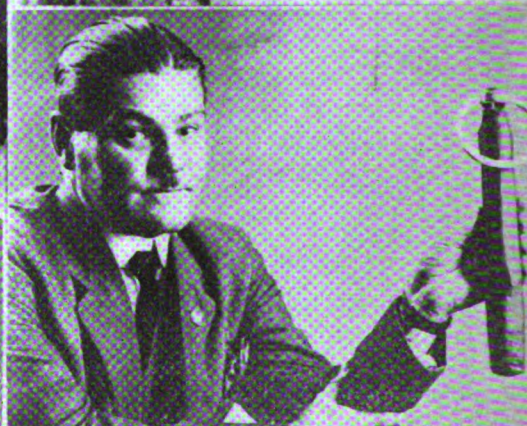
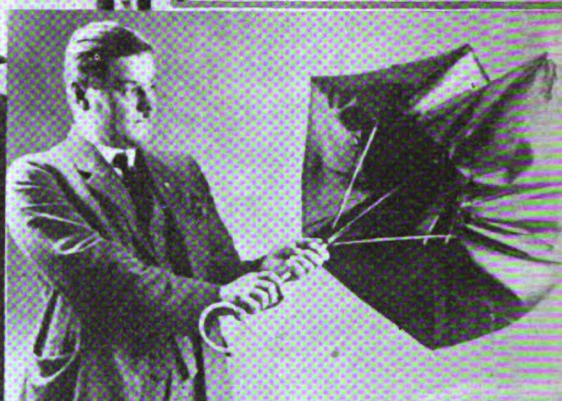


LA CROSSE NEW No. 19 ORCHARD PLOW For FORDSON TRACTOR

WIDTH OF CUT—24 or 28 inches.
OPERATION—Screw cranks for depth and leveling. No levers to catch limbs or trees.
LOW AND NARROW—Height over all, 27 inches. Outer end of power wheel hub only 7 inches outside of furrow wall.
HITCH—Flexible when in operation.
POWER LIFT—Simple, efficient and durable.
WEIGHT—560 pounds.



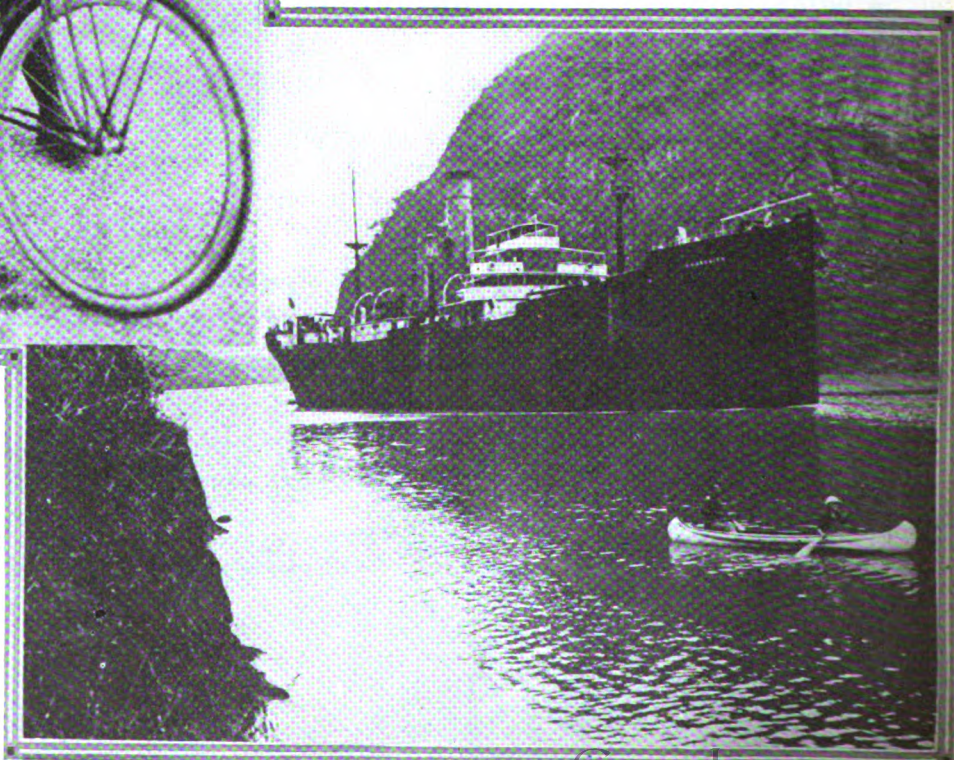
THE PRESIDENT'S TURKEY.
This 41-pound bird traveled by motor truck to the White House.



VEST-POCKET UMBRELLA. As is shown by the two pictures above this umbrella folds up compactly and may be carried in a pocket.



WOMAN IN BIG GERMAN RACE. One of the contestants in a recent six-day motorcycle race in Berlin was a woman. While she didn't win, she finished among the leaders. At the right is shown Miss Elsie Grieser and her brother who recently made a trip in a canoe thru the Panama Canal. The picture was taken in the famous Culebra cut.



Less Time and Less Work With an R-W Ball-Bearing Grindstone

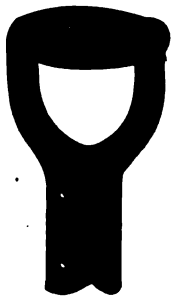


Don't "pump" your legs off on an old style grindstone. Get an easy running R-W grindstone and do a better job in half the time.

R-W Ball-Bearing Grindstones have steel frames that are light but strong, and remain rigid no matter how long or how hard you use them. Built on correct mechanical principles—the utmost in power with the least effort. Ball-bearing journals and crank attachment; detachable steel axle; cranks held securely on axle by our patented nut locking device. Adjustable, comfortable seat. Every stone guaranteed to be genuine Berea Grit—the best for general work.

See R-W Grindstones at your local dealer's—try them—test for yourself how the smooth-running R-W takes the "grind" out of grinding. Several models to meet your exact needs.

Save the Old Shovel or Fork With Malleable D's



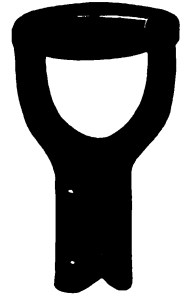
Wood Handle
No. 282

Many a well-liked, well-balanced old shovel, or spading or manure fork, has had to be thrown aside because of a broken handle. R-W Malleable D's will keep your old favorite at work as well as save you the cost of replacing it.



Side View

R-W Malleable D's have a three-inch strap ferule. Adjustable to any size handle and can be kept tight, even if wood shrinks. No trimming necessary. Held securely by two rivets. Easily removed if desired. Choice of wooden or all malleable handle. Ask your dealer.



All Malleable
No. 382

Richards-Wilcox Mfg. Co.

A Hanger for any Door that Slides

AURORA, ILLINOIS, U.S.A.

Minneapolis
Philadelphia

Chicago
Boston

New York
St. Louis

Cleveland
Indianapolis

Los Angeles
San Francisco

RICHARDS-WILCOX CANADIAN CO. LTD.
LONDON, ONT. Montreal

R-W Barn Door Hangers

A variety of styles to meet every requirement. Smooth-running, strong, durable. Ask your dealer to show you R-W Barn Door Hangers.



Quickly gives its imprint

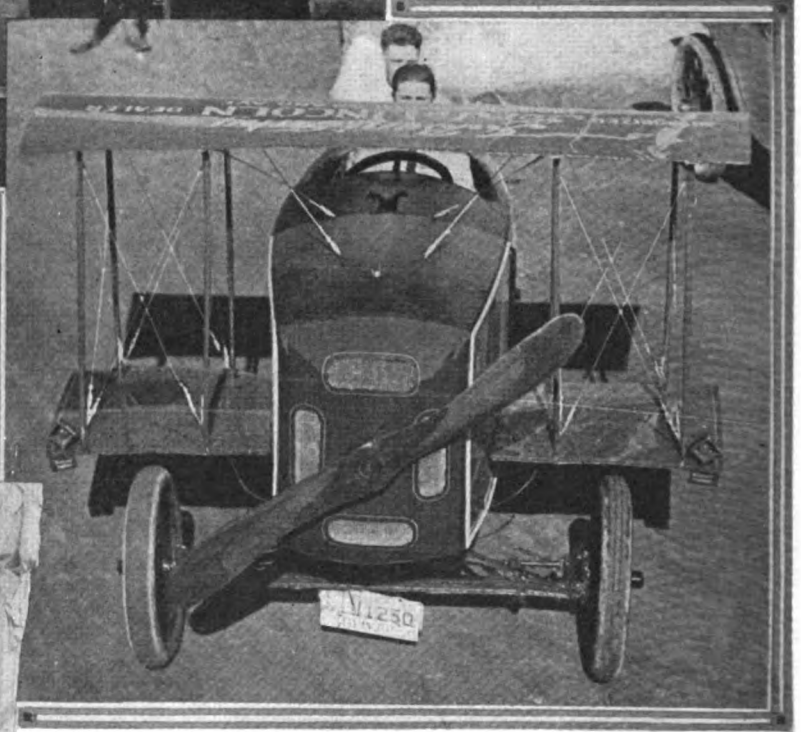
You Should Have This Free Book

Before you do any building, remodeling or "tinkering," write for Booklet P, "Hardware for the Farm and Home." Contains much helpful information.



SOME TRAFFIC COP. The tall man in the picture at the left is a traffic policeman in Denver. His name is Earl Sandell and he is 7 feet, 3 inches tall. When he holds out his arm as a signal to stop, they STOP.

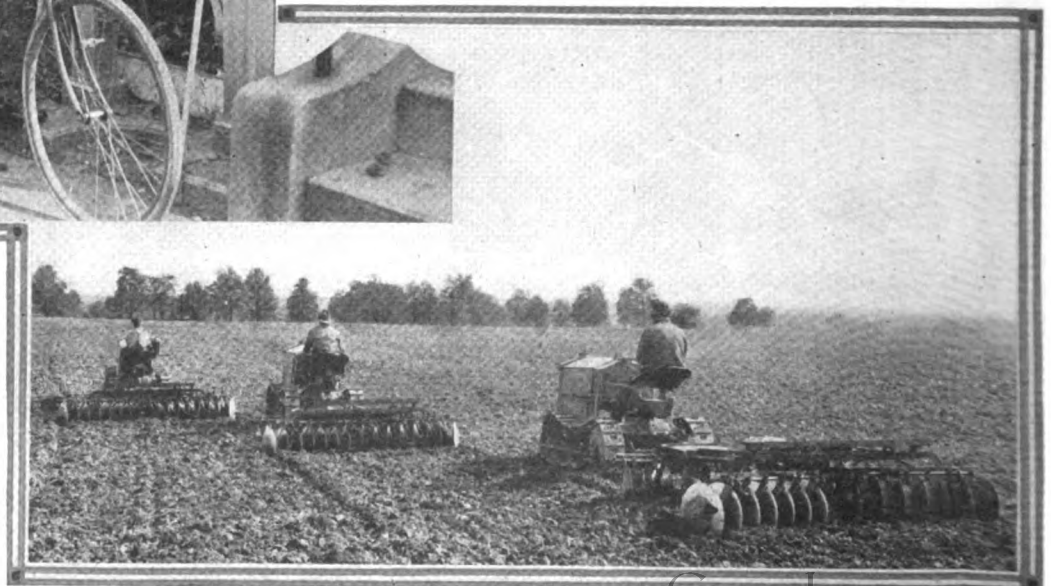
THIS FORD FLIES. At least it looks as tho is might. I. Benifahy, Ford dealer at Los Angeles, rigged the machine up so that it looks like a first class flying machine. It attracts a great deal of attention in its native city.



NO MAN'S LAND. Even the messenger "boys" at the headquarters of the Woman's Party in Washington are girls. The picture shows one of the couriers drawing up in front of the party headquarters.



TRACTORS WORK BIG FARM. This fleet of small crawler tractors do the work on the 2,000-acre Daisy Hill Farm, near Cleveland, Ohio.



The Work of the Month



JANUARY is the month to make plans for the year, for, as someone has said, "the brain used in January will save the back in July." One of the most profitable pieces of winter work is selecting the seed for the year's plantings. Tested seed goes far to insure good crops. Here is an illustration of the value of "certified" seed. Four Connecticut potato growers each planted three plots, with tested seed, home grown seed and untested seed. The tested seed yielded 317 bushels to the acre; the two others averaged 173 bushels, a difference of 144 bushels. All were the same variety, and were cared for exactly the same. Corn growers test their seed; so do those who have the greatest success with clover and other crops.



IN planning the season's work it is a great help to have a map of the farm. It does not necessarily have to be "drawn to scale," but should have the size of each field written on it. By studying the map and labeling each field with the crop it is intended to put in the owner can readily see just exactly what his operations for the year will be, and the best method of rotation.



DURING the next month it will pay to examine the farm machinery, make a note of the repairs to be made and the new parts needed, and order the latter. It requires time, especially when orders are heavy, for the manufacturer to fill orders for parts. A little foresight will save disappointment and permit the owner to have the work done in time to put the machinery in the best condition for the field work.



TRACTOR owners will find it to their advantage to give their machines a thorough overhauling during the winter and to follow the best advice as to their operation in cold weather. The series of articles on overhauling tractor engines that have been appearing in FARM MECHANICS this last fall will be of great assistance in this work. The concluding article, all of them by F. M. Service, the FARM MECHANICS motor expert, appears in this issue.



THE early spring crop of young livestock—pigs, lambs and chickens, will be coming along within the next couple of months. Sows and ewes need care

at this period. Both should be fed so that they will gain a little each day so that when their young arrive they will be in condition to suckle them.



IN the northern states the ice crop is ready to harvest in January, altho in some sections the cold does not break until toward the end of February. If the ice house is ready, the supply may be stored at the time when conditions are best. Good, dry sawdust or shavings are the best to pack between the cakes. Straw or hay packed between the walls of the building will help conserve the ice when the sun beats on it during the summer.



EGGS for the incubator are being gathered now, or will be during the latter part of January and first of February. These eggs should be gathered so that there is no danger of their becoming chilled in the nests. They should be stored in an even temperature, as alternate heat and cold will lessen their fertility. When getting ready to set the incubator it should be tested out for a few days before the eggs are put in.



Happy New Year.

HYATT

ROLLER BEARINGS

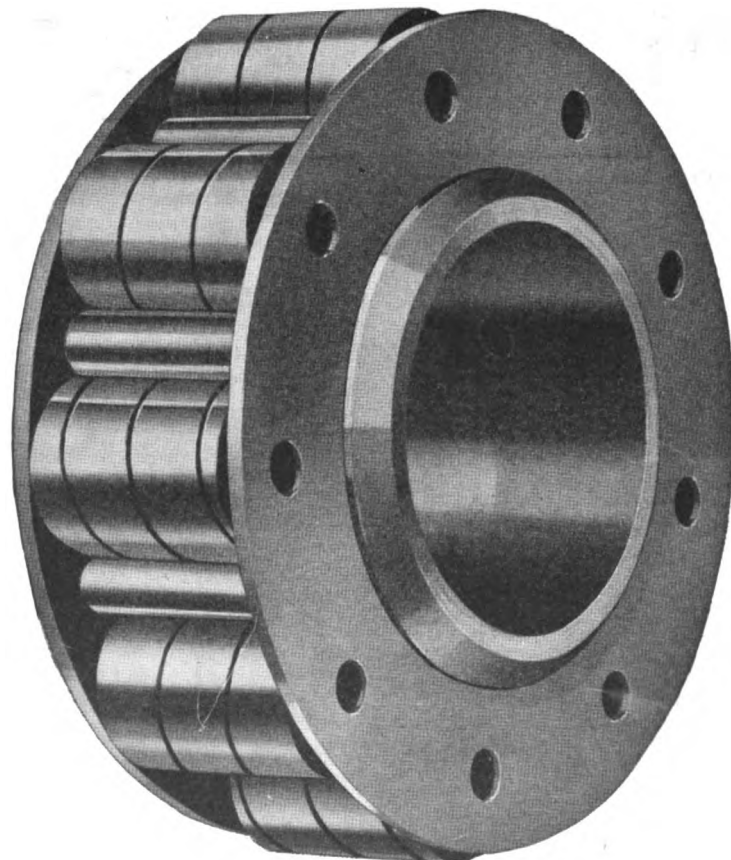
No adjustment of any
kind possible or necessary.
Absolutely foolproof

Owners of Hyatt equipped farm machinery do
not have to know where the Hyatt Bearings are
located—it is enough to know that they are there.

For a complete list of Hyatt Equipped Tractors and Implements write:

HYATT ROLLER BEARING COMPANY

Tractor and Implement Bearings Division, Chicago Motor Bearings Division, Detroit
Industrial Bearings Division, New York Pacific Coast Division, San Francisco, Calif.





Final 1922 Crop Report

BUMPER crops and higher prices increased the value of the 1922 crops on American farms nearly \$2,000,000,000, according to the final 1922 crop report issued by the United States Department of Agriculture on December 1. This is an increase of 32.1 per cent over the valuation placed on crops on December 1, 1921.

While a large proportion of the increase is due to the advance in the price of cotton, grain farmers were benefited considerably. The corn crop was 178,000,000 bushels less than in 1921, but was worth \$600,000,000 more. There was a big increase in the yield of wheat, the total exceeding last year by 46,000,000 bushels, grown on 2,466,000 less acres than the 1921 crop. The value of wheat was \$110,000,000 in excess of the 1921 crop.

Barley broke all records, the crop exceeding last year's by 31,000,000 bushels, while 15,000,000 more tons of hay were produced in 1922 than in 1921.

These figures are encouraging. They show a measure of returning prosperity for farmers. In other words, it would seem that the bottom of the depression in the prices of farm products was reached in 1921 and now the trend is upward.



Three Exceptional Articles

THERE are three articles in this issue of FARM MECHANICS to which we want to call your special attention. One is that on Farm Financing by Prof. Ivan Wright, of the University of Illinois. Another is on the situation in the Implement Industry by Floyd R. Todd, vice-president of Deere & Co., and the third is on livestock marketing by Major Edward N. Wentworth, of the Extension Department of Armour & Co.

It is now well recognized that only scientific and business-like farming methods will bring the greatest measure of success in farm operations. All three of these articles deal with subjects that are of the utmost importance. Study of them is exceptionally worth while.

And while discussing the contents of this issue, let us again ask you to send in your nomination of the man or woman "who has done most for farmers." Another page of portraits appears this month. All are of men who have had much to do with bringing farming to its present high plane. Write to THE EDITORS and suggest whose picture you would like to see in this series.

Farm Bureau's New Head

OSCAR EDWIN BRADFUTE, newly elected president of the American Farm Bureau Federation to succeed James R. Howard, who declined to allow his name to be presented, is one of America's best-known and most progressive farmers. He lives on the old home farm near Xenia, Ohio, in Greene County, where his grandfather was one of the early settlers.

Mr. Bradfute has served his second term as vice-president of the American Farm Bureau Federation. He is also president of the Ohio Farm Bureau Federation and one of the trustees of the Ohio State University. Mr. Bradfute is a stockman and farmer and has specialized in pure bred beef cattle as senior member of the firm of D. Bradfute & Son, world-famous breeders of Aberdeen-Angus cattle.

When the Farm Bureau movement came along Mr. Bradfute was one of the first men to see that it was founded on a rock and bound to sweep the country.



O. E. Bradfute, President American Farm Bureau Federation.



New Year Resolutions



I WILL keep an accurate set of books of my farming operations.

I WILL raise the quality of my livestock by using pure-bred sires.

I WILL investigate the economy of using power equipment to decrease labor costs and increase production.

I WILL adopt a systematic plan of increasing the fertility of my soil, for the benefit of myself and those who come after me.

I WILL use only tested seed, which mean larger and better crops.

I WILL spray my fruit trees and my root crops.

I WILL make my buildings more impervious to weather and more attractive by painting them.

I WILL take better care of my machinery, implements and tools, keep them in repair and housed when not in use.

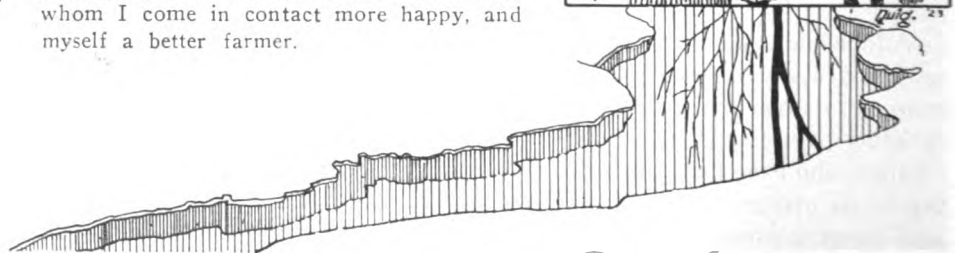
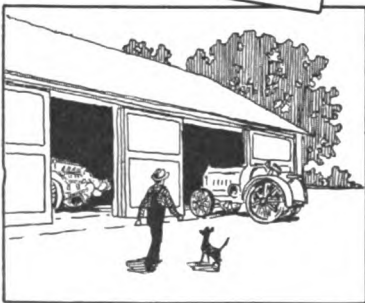
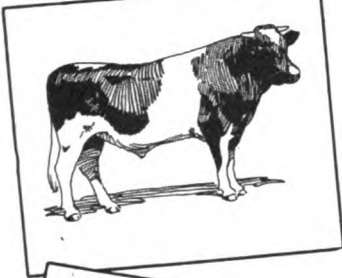
I WILL add to the happiness of my family by providing, to the best of my ability, modern, labor-saving conveniences in my home.

I WILL take a more active interest in farmers' organizations and take advantage of the services of my county agent.

I WILL give my best in support of the school for my children and make them better fitted for a course in college when they are old enough.

And finally—

I WILL, in my relations with my fellow-men, follow the Golden Rule, thereby making my life and the lives of those with whom I come in contact more happy, and myself a better farmer.



What Must You Buy in '23?

The Farmer's Dollar Now Has Greater Buying Power When Translated Into Farm Implements Than in any Other Commodity, But Advances Seem Almost Certain

By FLOYD R. TODD
(Vice-President, Deere & Co.)

EDITOR'S NOTE—As farm inventories have been or will be taken during January, and farmers have realized what farm implements and machinery it will be necessary to buy this year, FARM MECHANICS asked Floyd R. Todd, Vice-President of Deere & Co., manufacturers of a complete line of farm implements and farm machinery, to give its readers a summary of the present situation in the implement industry. This summary is encouraging for the farmers of the United States. Coming from Mr. Todd, who is recognized as one of the foremost analysts of business conditions as they affect the farmer and his allied business associate, the farm implement manufacturer, the facts given in this article may be accepted without hesitation.

DURING the war when all our energies were expended in a single direction, farmers were urged to curtail buying of farm implements, fix up their old machines and make them do. Farmers, like all other patriotic men, did this. That experience has taught farmers how to economize—how to better care for their machines and how by repairs and replacement of parts they can keep their old machines in working order. When the slump in the price of farm products came in 1920, American farmers continued this policy with the result that the farm implement industry has suffered to a greater extent than is generally known.

When prices of farm products were high in 1920, implement manufacturers thought that they had a substantial revival of business. Statistics of production and consumption of their products, however, tell a different story. In that year the tonnage demand for farm implements was 25 per cent less than the last pre-war year, 1913. At the same time it was 20 per cent greater than the average for the preceding five years.

It has been difficult for farm implement manufacturers to realize how the farmers of the country have been able to produce crops with the machinery in their hands. Curtailment of buying has been constant for nine years. The equipment of the American farmer must be depleted to a greater extent than ever before. As a consequence 1923 is expected to see a greater demand for farm implements than there has been in the last few years.

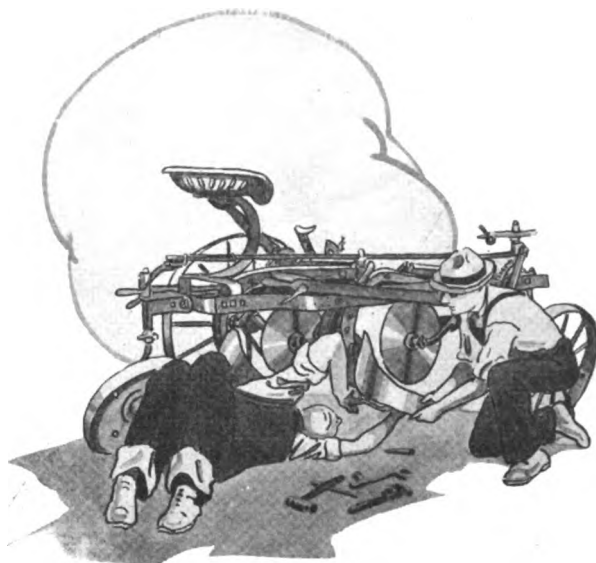
Now for the other side of the picture—the farmer's side. The slump of 1920 hit farmers hard. High costs of production coupled with a rapidly falling

market, left the farmer in about the same position the implement manufacturers had been. The only difference was that the implement manufacturer could control the prices of his products while the farmers could not. But what did that amount to when there was no market? To move his stocks on hand and the stocks in the hands of the dealers price cuts had to be made, irrespective of profits or even costs. The cuts were made, economies in handling and selling effected, and the storm weathered.

What have been the results? To state them in a single sentence, the buying power of the farmer's dollar at the present time, December, 1922, is greater when taken to the implement dealer's store than to the dealer in any other commodity the farmer is required to buy.

The average price of farm products, as this is written, is between 35 and 38 per cent above the pre-war level. The present level of prices of farm implements, when all his equipment purchases are considered, is slightly more than 35 per cent above the pre-war level. This means that manufacturers' prices and the prices of farm products are practically on the same level as they were in 1913. Cost to the farmer at the dealer's store, however, will be somewhat greater, as the substantial increase in freight rates and the dealer's increased costs of doing business must be considered.

Consider the following table comparing the price per pound of implements and household equipment.



During the War Farmers Learned How to Repair Their Old Machines.

This is given merely as an example to show that in farm implements the farmer gets more for his dollar than in other commodities.

FARM EQUIPMENT		HOUSEHOLD EQUIPMENT	
	PRICE PER LB.		PRICE PER LB.
Dump Rake	\$0.09	Kitchen Stove	\$0.09
Disk Harrow .....	.09	Bath Tub .....	.12
Mower .....	.10	Wash Boiler .....	.15
Binder .....	.11½	Steel Frying Pan....	.15
Grain Drill .....	.13	Hand Washing Machine .....	.21
Cultivator .....	.13	Cast Iron Griddle....	.17
Gang Plow .....	.15	Coffee Pot .....	.22
		Piano .....	.36

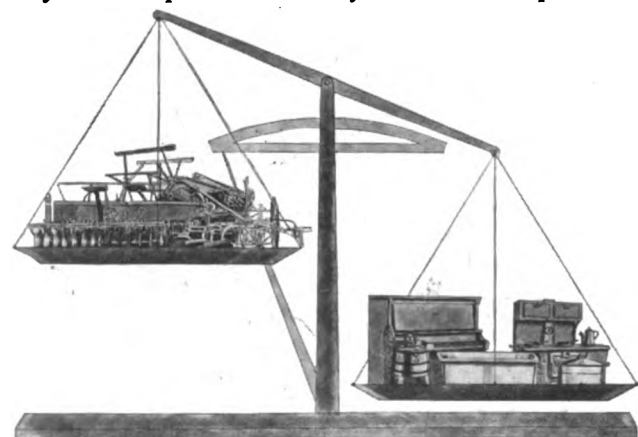
How long this condition can maintain I do not know. But there are indications that it cannot last long. If the prices of the raw materials that go into the manufacture of farm implements continue to rise prices of implements must be increased, or the manufacturers must quit manufacturing.

Last March the level of material costs to the manufacturers was approximately 61 per cent above pre-war. Since that time, due to many causes, and to the coal and railroad strikes especially, these costs have advanced steadily until today they are nearly 100 per cent above pre-war. The following table, all prices f.o.b. Moline, Ill., will show what these advances have been.

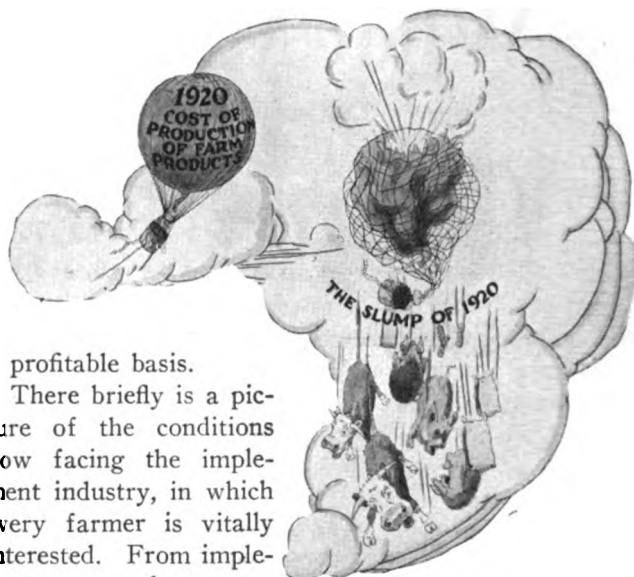
COST OF RAW MATERIALS ENTERING INTO MANUFACTURE OF FARM IMPLEMENTS

	Mar. 1, 1922	Apr. 22, 1922	May 23, 1922	July 20, 1922	Sept. 11, 1922	Oct. 6, 1922
Hot Rolled Bars.....	19.6	28.3	35.6	38	52.5	56.2
Cold Rolled Steel.....	44	44	50	53.3	77.6	77.6
Bar Iron	58.1	69.3	69.3	81.9	123.7	147
Sheet Steel (Blue Annealed)	84.1	94.3	94.3	91.2	98	98
Bolts, Nuts and Rivets	89.5	121	146	152.6	184.2	184.2
Soft Center Steel.....	72.6	72.6	78.4	94.7	94.7	106.2
Solid Plow Steel.....	118.2	118.2	118.2	116.2	138.1	160.1
Malleable Iron	100	100	100	115.4	123.1	146.1
Pig Iron	54.7	65.3	79.4	85.6	142.2	142.2
Coke	160.4	160.4	160.4	165	237.9	237.9
Steam Coal	149	149	149	149	265	258.6
Fuel Oil	91	91	91	57.1	78.3	78.3
Lumber	80	80	80	90.7	90.7	90.7

In 1921 implement manufacturers suffered very substantial losses. In 1922, economies effected, reductions in stocks of materials on hand, decreased interest charges, etc., somewhat improved conditions, but as yet the implement industry has not been placed on



The Balance of Prices of Commodities Is in Favor of Farm Implements.



When the Slump Came the Prices of Farm Products Dropped Far.

a profitable basis.

There briefly is a picture of the conditions now facing the implement industry, in which every farmer is vitally interested. From implement manufacturers farmers must secure their equipment, just as implement manufacturers must secure iron, and steel, and coal and the other materials necessary to produce the farmers' equipment. It is an endless chain. Costs to one are reflected in the costs to the other. Low cost of manufacture to implement manufacturers, means lower prices of farm implements to the farmer, higher costs to the manufacturers mean higher prices to the farmer. It cannot be any other way.

With these facts in mind—rising prices of materials and increasing labor costs, the implement manufacturers set out to determine their schedules of prices for the first part of 1923. Had the usual rule been followed these prices, in view of costs, would have been fixed at from 10 to 15 per cent higher than those of 1922. But they were not. And for this reason.

The entire business world must soon come to realize that the price of products of labor to the American farmer cannot be on a base relatively higher than the price he receives for the products of the soil and enable him to continue to keep our great industrial and transportation systems on a prosperous plane. A break has to come somewhere. Implement manufacturers are going to do their part.

Coming from me, being connected with the implement industry what I am going to say to the American farmer may seem actuated by a selfish interest. But it is not, as I realize, that if we implement manufacturers cannot be trusted by our customers, we have come to a sorry state.

The more quickly you buy the farm machines and implements you actually need in 1923, the better off you will be. For, as I have shown, all indications point to higher prices for implements, or the other alternative, to curtail production to the point that when farmers will be forced to buy, their demands cannot be satisfied.



How to Market Farm Products

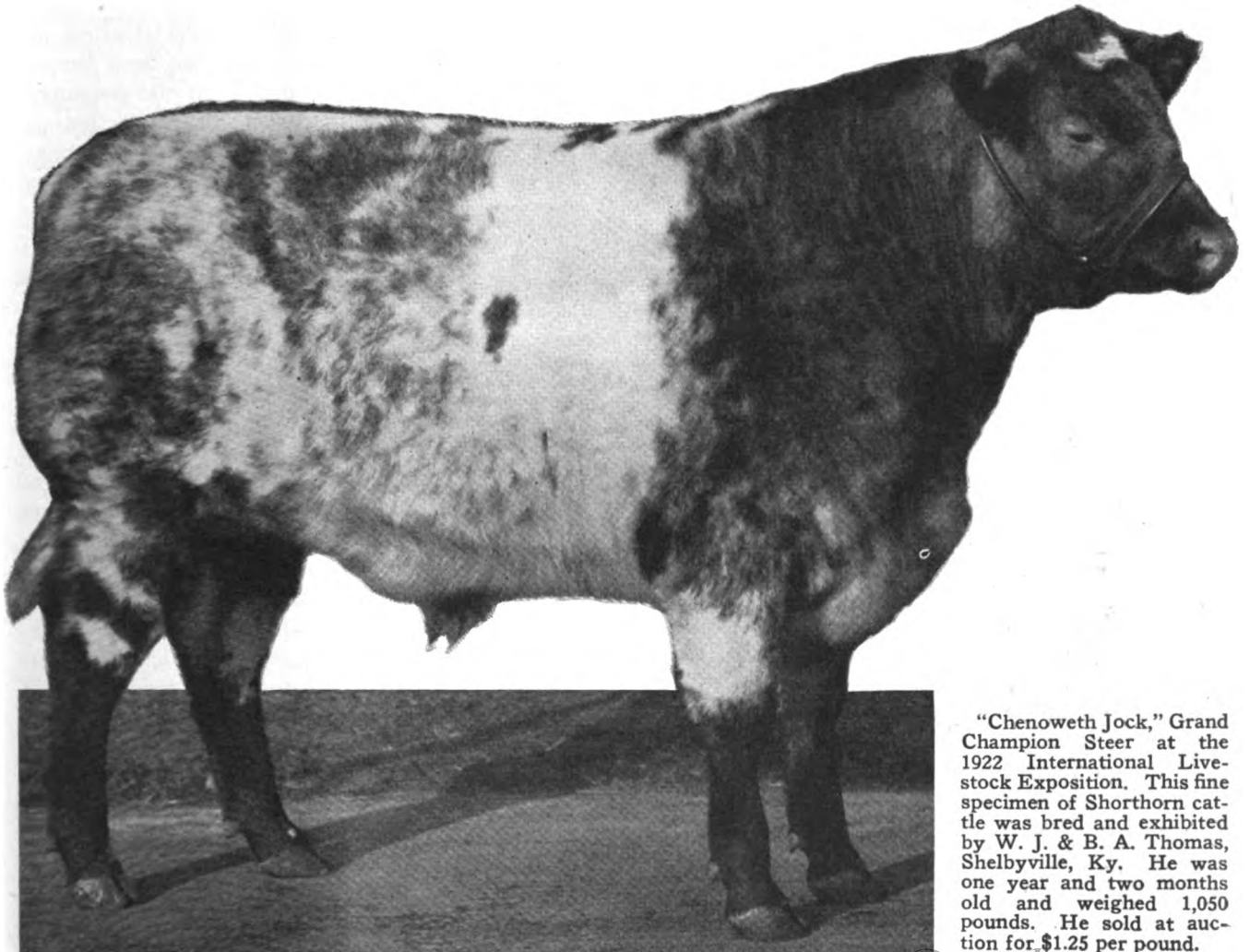
Beef Cattle Market Changes

Smaller, Younger and Well Furnished Purebreds Supply the Present Public Demand and Bring the Best Prices

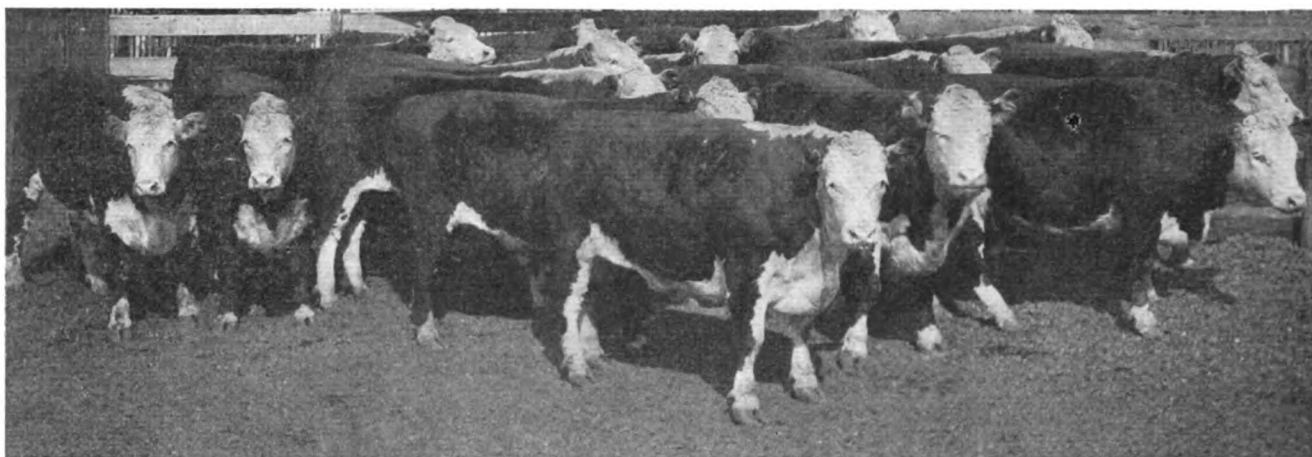
By EDWARD N. WENTWORTH

THE growing tendency among cattle feeders is to regard quality and finish in cattle as superfluous, due to the narrowing margin in price between the poorest kinds of cattle that reach the market and those of best grade. The majority of feeders can remember when such animals as canner

cows had no value with the packer or retail butcher, and the increasing uses which have been found for them, sufficient to give quotable prices from day to day, have been interpreted by these feeders to mean that quality no longer has the value it once enjoyed. Nothing could be further from the truth. Quality



"Chenoweth Jock," Grand Champion Steer at the 1922 International Livestock Exposition. This fine specimen of Shorthorn cattle was bred and exhibited by W. J. & B. A. Thomas, Shelbyville, Ky. He was one year and two months old and weighed 1,050 pounds. He sold at auction for \$1.25 per pound.



Carload of 2-Year-Old Herefords. Beef cattle of this size and finish find a ready market at top prices.

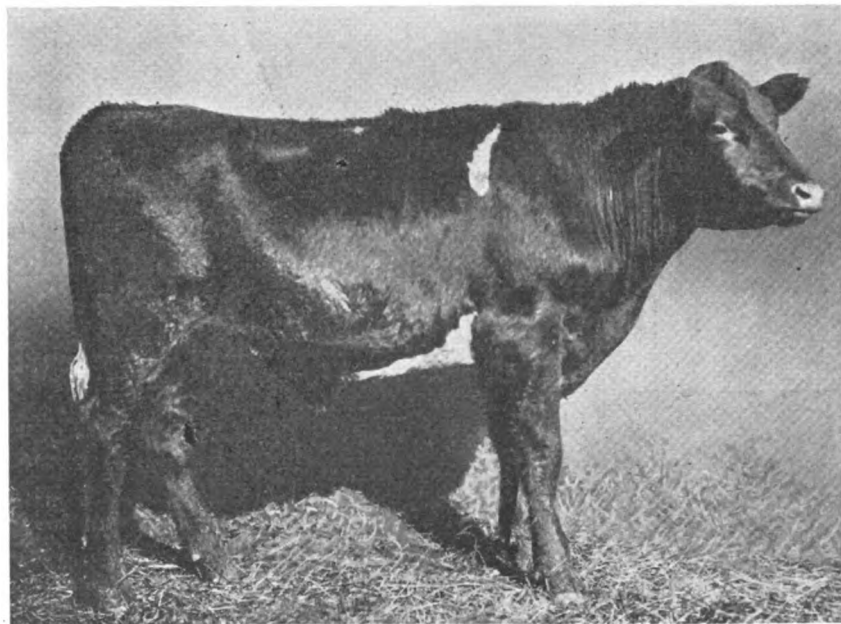
cattle will always be properly appraised, because they produce the class of meat that is easiest to sell, requiring a minimum of effort on the part of the ultimate salesman.

From year to year the standards as to market types and classes are changing, based on the changing demands of the consumer. The cattlefeeder usually learns of these changes when he sells, and occasionally feels that the market asks for any kind of cattle other than what he brings. The chief difficulty in meeting exactly the market demands, lies in the fact that the standards of cattle of one or two decades ago still persists in the minds of many feeders and are perpetuated by the types of steers recognized by the majority of judges in the fat stock shows. Whether or not the feeder intends to do so, he carries in his mind the standard of perfection established by the heavy, richly finished bullocks popular twenty years ago, and he interprets the trimmer killing characteristics which modern cattle show, coupled with the

lesser size, as distinct steps backward.

The chief factor in bringing about the change in type has been the change in retail demand. The public, while more fastidious as to the cuts of beef it consumes, does not eat as much meat as it did formerly, and will not tolerate the waste in cuts that rich steaks and roasts of a half century ago possessed. The modifications in market standards are based on these two simple facts, and the trade must educate itself to the idea. The retailer has been most sensitive to this change in demand, but the reaction on the packer has been so direct that he has been forced to translate immediately the desires of the consumer into a type of cattle suitable for the production of the best selling cuts. The principal factors that have caused the change are the increase in the population of cities coupled with the reduced ratio of producers; the inroads on the family purse made by luxuries, which have restricted the percentage spent on necessities; and the reduced size of families which has permitted groceries with small meat shops vending pound to two-pound cuts to make deep inroads into the business of the specialized butcher.

The demand for heavy cattle varies little thruout the year. The markets of the big cities, principally New York, Chicago, Philadelphia and Boston, supply the principal trade, the sales being largely to hotels and clubs that have a standard demand for certain cuts the year around. This natural demand for heavy finished cattle takes only about 15 per cent of the cattle on the market, their live weight being 1,300 pounds and up, and their carcasses making about 750 pounds of beef and up. In order that prices for this class of cattle remain steady and hold the same relative relation to other classes of cattle, the supply must be regular as a few too many can

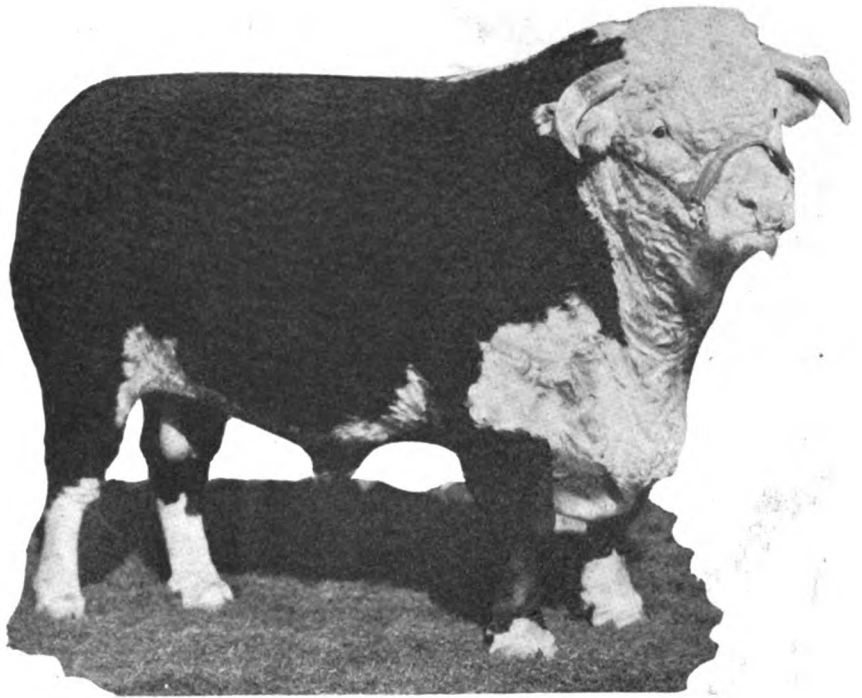


Fine Type of Feeder Steer, Selected by the U. S. Department of Agriculture as the Sort of Young Animals Feeders Should Buy.

readily glut the market. Unfortunately, it is difficult to finish cattle of this sort at all seasons of the year; few of them coming on the market in the period from August 1st to February 1st excepting cattle finished for shows and for the Christmas trade. From February on there is usually a sufficiency of this class of cattle, while late March and April may find a few too many with consequent drops in price. On the other hand, in times of scarcity of heavy cattle, buyers having orders for this class of stock make competition so lively that steers weighing 1,400 pounds or up which will satisfy their trade, often bring \$1 to \$2 above their real value as compared to smaller cattle of the same grade. A judgment of values based on the price of this class of cattle either in times of scarcity or surplus, is bound to be misleading to the average feeder.

The profit in beef production in the future will increasingly lie in quality stock. Early maturity and quick money turn-overs are certain to be the keynotes of future meat production, due to high land and feed values. Cold blooded stock will never utilize feed for fattening and finishing until the animals are well grown, three years old or over, while breeders and feeders will need to have their money back out of their animals by the time they are two years old, unless the cattle are range grown, when the difference in production costs will permit their profitable retention for another year. Furthermore, the value of well-bred cattle has been demonstrated during the first four years following the war by the fact that well finished yearlings have topped the market at all times for periods longer than a week in duration. During this time there has been a spread of 50 cents to \$2 per hundredweight between the yearlings and older cattle of the same quality. Only cattle high in the blood of the purebreds are capable of reaching this degree of finish in their yearling form. A six-months calf of good blood, dropped in the spring, can be fattened so as to be marketed the following spring or summer from any cornbelt farm, but a six-months scrub will not efficiently utilize its feed because its growth is slow, and it will not develop as rapidly, fatten as well, nor grow as satisfactorily as the well-bred animal. Well-bred calves can always be finished from calfhood on, and can make the best quality of carcass, since they can utilize efficiently feed that the scrub cannot consume economically from lack of capacity or from inability to fatten or grow.

The use of purebred sires is the certain means of success in the future. This does not mean the in-



"Panama 110th," Grand Champion Hereford Bull at the International Livestock Exposition. He is owned by A. B. Cook, Townsend, Ore., is 3 years and 10 months old, and weighs 2,400 pounds.

discriminate use of such animals without regard to results—prices paid for them must be always as firmly grounded in returns as prices paid for feeders—but it does indicate that thru them the efficient beef production of the future must be built. Quality as recognized today means better meat for the consumer, better killing qualities for the packer, and more efficient feeders for the producer. People are not buying meat nowadays to throw part of it away, and the majority of families with restricted pocketbooks are buying the medium weight cuts. The livestock market simply interprets the tendency of the meat-eating public and it recognizes that consumers will not tolerate waste except at a discount.



Farm Power Equipment and State Fairs

"POWER Farming Days," which were held by some of the state and smaller fairs last year paved the way for a more general recognition of the importance of power farm equipment at the annual exhibitions. The International Association of Fairs and Expositions, meeting in Toronto, recently, adopted a resolution recommending that "a just proportion of advertising and effort be given to machinery exhibits" and that "a special day be designated, advertised and featured as 'Power Farming Day.'" Guy H. Hall, director of the National Institute of Progressive Farming presented the claims for a greater recognition of the equipment industry.

In view of this action visitors to the 1923 fairs will have an opportunity to see greater displays of modern farm equipment and to learn of its uses and operation.

IOWA WINS JUDGING CONTEST

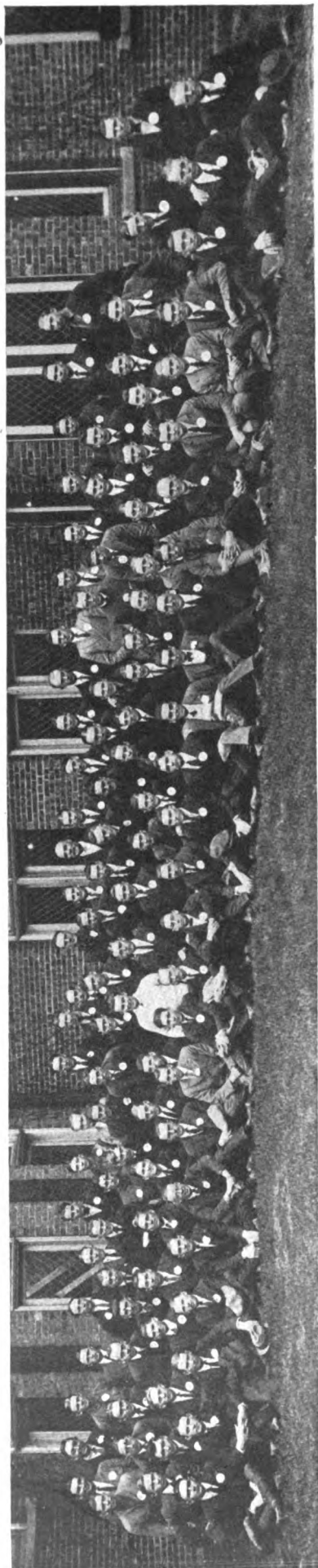
MORE than 100 students in the animal husbandry departments of the State Agricultural Colleges competed in the cattle judging contest at the 1922 International Livestock Exposition, held in Chicago, December 2 to 9. Premier honors were carried off by the team from Iowa State, and for the coming year the trophy will grace the college at Ames.

Greater competition or more scientific judging by the college students has never before been exhibited, those in charge of the contest report. It was a great field which the Iowa team led.

The photographs that are reproduced on this page show the group of teams from the different colleges and the winning team.

The International Livestock Exposition this year was the greatest in its history, drawing a greater number of entries in the different classes and an unusually large attendance, which was made up of farmers from all parts of the country, as well as the Chicago people who were largely in evidence in the evenings.

Interest among the college men, however, was centered in the cattle judging contests, and every team had its supporters.



Members of the Agricultural College Cattle Judging Teams that Competed at the 1922 International Livestock Exposition.



Iowa State College Team, Winners of the Cattle Judging Contest at the 1922 International Livestock Exposition. From left to right they are: P. S. Shearer (coach), H. B. Boyle, J. H. Hilton, S. S. Wheeler, D. S. Duffert, S. I. Graham, and J. C. Hulbert.

How The Farmer Is Financed

His Business Has Grown to Such Proportions That Government Banking Facilities Have Been Extended to Meet His Needs

By IVAN WRIGHT, University of Illinois

(Author of Bank Credit and Agriculture, American Farm Mortgage Credits, etc)

EDITOR'S NOTE—*Financing the farmer is one of the most important subjects before the country. The American Farm Bureau Federation is making better farm financing facilities one of its leading objects. Herewith is the first of a series of articles on "How the Farmer is Financed" by Prof. Ivan Wright, associate professor of Economics at the University of Illinois. Professor Wright is a recognized authority on this subject, and the series of articles he has prepared for FARM MECHANICS thoroly explains the present facilities thru which the farmer may secure the money to finance his business. Every FARM MECHANICS subscriber is urged to read carefully and preserve these articles, so that he may thoroly understand, and be in a position to take advantage of the financing system that has been set up for his use.*

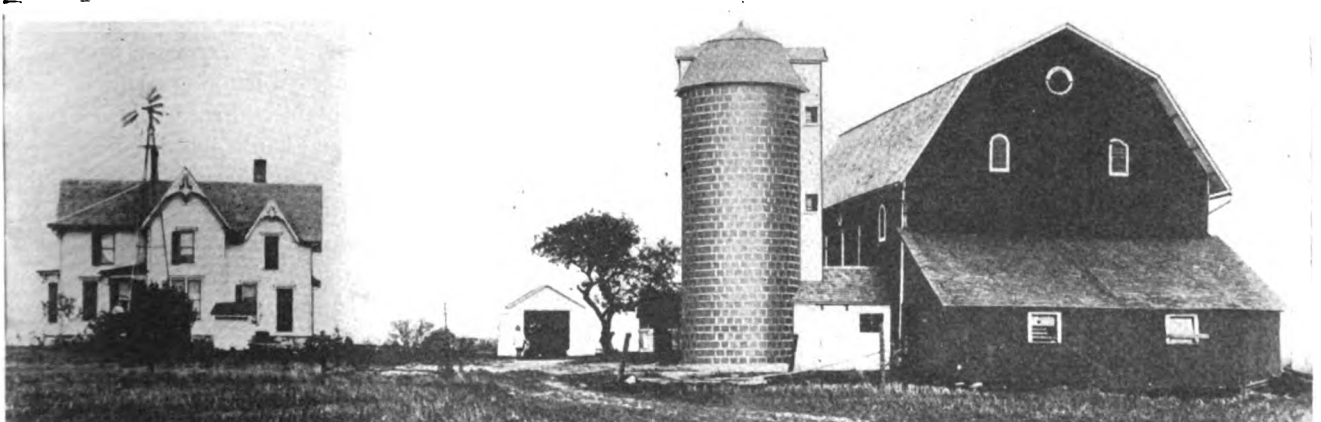
THE financing of agriculture is a many sided problem. It includes not only the supplying of the individual farmer with long term credits to finance the purchase of land, the making of improvements, and the obtaining of fixed capital with which to carry on production; and short term credits for seasonal purposes to provide for the purchase of seasonal supplies, the planting, harvesting, and marketing of crops, but also the farmer's financial welfare, includes adequate insurance and fair consideration in the matter of taxes and tariffs. These are all financial problems that affect the farmer's income and outgo both directly and indirectly. Adequate consideration of the farmer's immediate financial problems and the influences affecting his financial conditions is of prime necessity for the welfare of the individual farmer as well as national prosperity. More than half the people of United States derive their money income directly or indirectly from the resources of agriculture.

If the income of this half of the people is depleted or becomes unbalanced in proportion to that of the other half of the population, it will react upon industrial progress thru the reduction of the buying power of the agricultural classes. For these reasons it is imperative that the farmers receive their full share of credit to carry on their productive activities.

Rise of the Need for Farm Finances

The banking facilities of United States developed primarily for the financing of commerce and industry when agriculture was not in serious need of banking facilities. This applies particularly to the development of the state banks and the national banks. During the early development of these two classes of banks almost anyone could obtain a farm either free or at a very low price. Of course farm capital such as we have today was unknown and such mechanical equipment and buildings as the farm required were either constructed on the farm or supplied from the immediate neighborhood. The farm labor problems were taken care of by cooperative exchange in tasks with the neighbors, where a number of farmers would assemble on one farm at a time and do the harvesting, threshing, corn husking, and log-rolling. The marketing of farm products was a matter of home consumption and exchange with the neighbors with some surplus to export which increased with the development of transportation.

The Homestead Act of 1862 gave to settlers over the age of twenty-one who were citizens of United States or who had declared intentions of becoming citizens the right to locate upon 160 acres of unoccupied public land in any of the public land states or territories provided the settler would live upon his



Modern Farm Buildings and Their Equipment Represent a Considerable Investment of Capital. They pay dividends on the investment, but not every farmer has sufficient capital to erect them and needs to employ the capital of others.



Carrying Livestock to the Point Where It Is Ready to Market Also Requires Capital and the Banks Are the Places to Supply It.

land five years and comply with the requirements of the law in the matter of improvements and the like. For those settlers who took advantage of the Homestead privileges land banks and mortgage banks were unnecessary to provide for the purchase of farms but long before all the Homestead land in the better agricultural states had been taken up the farm mortgage business had grown to considerable importance. Farms that had been acquired by purchase or under the Homestead Act were mortgaged to secure capital for improvements and to carry on the business of producing and marketing farm products. With the improved transportation which made it possible for a farmer living in the interior to ship his products to eastern markets and to foreign countries land values increased until in 1862, the date of the Homestead Act, the lands of the Mississippi Valley which had been acquired at \$1.25 an acre were selling at from \$30 to \$50 an acre, and these same lands today changed hands at from \$200 to \$400 an acre. This increase in land values due to the increased demand for American farm products necessarily brought with it the demand for credit facilities to finance the buying of land and the supplying of equipment to produce and market farm products. Before the Civil War farm mortgage banks and agents of eastern companies were doing a large business in obtaining mortgages upon good farms in agricultural states and the selling of these mortgages to eastern investors.

The Civil War brought with it the establishment of the National Banking System which had for one of its primary purposes the providing of a uniform currency, that is a bank note that would be accepted in any state or by any citizen in the payment of ordinary debts. This was highly desirable because under the system of state banking which existed before the Civil War an individual travelling from one community to

another, or from one state to another, frequently found it impossible to use the currency of his own home community in paying his debts in other communities. In order that the national banks might bring about a uniform note currency it was necessary that they should have exclusive control of note issue which they obtained by the placing of a tax of 10 per cent upon all other issues of note currency. As desirable as this was, it removed from the rural communities a currency which tho highly inefficient and unsatisfactory had served local needs and did not supply the rural communities with national bank currency to take its place because the national banks were restricted by the requirements for organization to the larger towns and cities until 1900 when the capital requirements for

organizing a national bank was reduced to \$25,000 in towns of less than 3,000 population.

The state banks which remained in the smaller towns for the most part had small capital and were forced by the requirements of their business to avoid large investments in farm mortgages. A large number of the state banks, however, contributed a very valuable service to the rural communities by acting as agents for insurance companies and other concerns in the obtaining of mortgages for their investments. Many of the state banks who invested their own funds too freely in farm mortgages found themselves at times embarrassed. Also the deposits of the state banks in the agricultural districts were small and were soon moved to the large centers in the payment for capital and equipment which was bought by the farmers. The commercial activities utilized the state banks to the extent of their capacity for the most part and in addition the very nature of the state banks' business makes it inexpedient for them at any time to tie up too large a portion of their funds in unliquid assets like farm mortgage investments.

The national banks were forbidden by law to invest in real estate securities. This was a very wise provision because the nature of commercial banking requires that national banks be able to obtain control of their assets upon short notice. If national banks had been allowed to invest freely in farm mortgage securities, no doubt they would not have taken advantage of the privilege because their own safety would have disqualified farm mortgages for a large part of their business. In many instances those national banks that violated the law and invested in farm mortgages found themselves embarrassed when customers demanded cash and they could not get control of their assets because they had been invested in long time securities.

It is therefore obvious that both the national banks

and state banks developed as commercial banks to meet the requirements of commerce and industry and such short time agricultural financing as fell within the scope of their business. Despite the fact that both of these classes of banks at times dealt in farm mortgages their facilities and their ability were not adequate to take care of the credit needs of the farmer. Consequently a system of farm mortgage banks developed. The insurance companies did a big business in farm mortgages. Rural merchants carried a large farm credit business. After 1900 it became obvious that the development of agriculture was very much handicapped for the want of credit facilities. Also it appeared that some of the agencies dealing in farm mortgages as well as short time credit were exacting excessive rates of interest and commission charges. In the cotton districts of the South interest rates running as high as 40 per cent were reported. In many of the western districts interest rates on farm mortgages including commission were found to run as high as 12 per cent.

Rural Credit Conditions

The rural credit conditions were becoming so pronounced about 1908 that political parties, agricultural extension workers, rural co-operative enthusiasts, and the rural press began to make a portion of their propaganda that of improving the farmers' credit facilities. It was a very difficult situation. The farmers themselves had never learned to use banking facilities as they should have. Due to unsatisfactory rural banking facilities the farmers had been distrustful of credit instruments. They had demanded cash for what they sold and cash was demanded of them for what they bought. Consequently many farmers carried the proceeds of their crops in their own tight boxes to pay for their purchases thruout the year. This brought upon them at times the accusation of hoarding money but the inadequate banking facilities afforded them is responsible for this habit as well as the thriftless schemes of store credit which developed in many rural districts. However, at this time the farmers thoroly realized their need for better banking facilities. Those who sought the farmers' support perhaps realized it even more than the farmer himself. To improve these conditions educational and political interests turned their attention to the study of rural credits and means of betterment. The endeavors for banking reform of the national banking system included a consideration of the credit needs of agriculture. The investigations carried on in foreign countries included in their study information on how farmers are financed in the various civilized countries of the world. The drafters of the Federal Reserve Act, 1913, had in mind the needs of agri-

culture and provided for the short time financing of agriculture thru the member banks of the Federal Reserve System and for five year loans on mortgages under certain restrictions.

Numerous studies of the credit facilities afforded by foreign countries to farmers were made. Among the more important of these was a study made by Ambassador M. T. Herrick which is an excellent collection of the history and practices of European rural credit institutions. In 1913 the Southern Commercial Congress appointed a commission to investigate the facilities for rural credit and cooperation in Europe. This commission working with a commission appointed by President Wilson made a study of European credit and co-operative organizations and compiled and published their evidence in Senate Document 214 of the 63rd Congress. After their report, a number of bills were introduced into Congress. None of these bills was satisfactory. In 1915 a special committee was appointed to draft a bill that would meet the agricultural credit needs of the American farmers. This bill was passed and signed by President Wilson July 17, 1916. It is the Federal Farm Loan Act and provides for two systems of banking. One system is the Federal Land Banks which are limited to twelve in number and which may have any number of local associations of farmers comprised of ten or more borrowing farmers and known as National Farm Loan Associations. The other system of banks is the Joint Stock Land Banks which are organized by private initiative, and which loan directly to farmers. These two systems of banks are governed by the same law and by the same Federal Farm Loan Board and are intended to meet the needs of the different classes of farmers for long term mortgage credit.

Despite the short term credit facilities afforded thru the member banks of the Federal Reserve System when the depression came in 1920, it was obvious that the farmers had need for another class of credit somewhere between the short term credit furnished by commercial banks and the long term credit furnished by mortgage banks. To meet this need, attention was turned to the War Finance Corporation, and on August 24, 1921, the Agricultural Credits Act was passed authorizing the corporation to make advances not ex-



Good Farm Machinery Means Better and More Profitable Crops. Money may be borrowed to purchase this equipment.



Thresher, Tractor and Truck All Are Machines That Cut the Cost of Producing and Marketing Farm Crops. Borrowed capital is needed to place these pieces of equipment on the farms.

ceeding a billion dollars for the purpose of financing the exportation of agricultural and other products to foreign countries. The farmers and co-operative associations have taken advantage of the credit furnished by this act and the service to American agriculture as well as to industry as a whole cannot be estimated. Vast sums have been expended not only to organized agriculture, but to bankers in rural districts who have extended loans to farmers for the production and marketing of crops.

Credit Facilities

At this time we have in this country a great variety of credit facilities serving the farmer. Among the more important of these which have been mentioned, are the Federal Land Banks, the Joint Stock Land Banks, the Mortgage Banks, insurance companies, state banks, national banks and the War Finance Corporation. Only the state banks, national banks and the War Finance Corporation extend short term loans to farmers. The War Finance Corporation might be characterized more properly as an institution which extends intermediate credit to farmers. The other institutions named handle long term or mortgage credit only. It will be the purpose of the series of articles to follow to take up a discussion of each of these institutions and point out how farmers can obtain credit thru each of them; how much credit can be obtained; where and by what means this credit can be obtained and how to use this credit.

If the farmers wish to enjoy good credit accommodations, they must comply with requirements for sound banking and investments. Slip shod, happy-go-lucky methods of farming where soils, buildings and machinery depreciate, crops and livestock are not adequately cared for and poor management is in evidence, do not

invite good credit facilities. While most mortgage bankers do not care to extend loans on the average for more than 50 per cent of the value of the land, these loans are increased for progressive farmers who have built up a reputation for successful practices and good management. Local bankers may only wish to extend credit to farmers for 50 per cent of the market value of their crops and livestock, but where farmers comply with all the requirements of good banking and supply adequate accounts and records of their practices, insure their crops and livestock, and pay their bills promptly, bankers will quite often credit to them on their general reputation without considering the mathematical value of any specific farm products.

All loans must be paid. The banker, either a commercial or mortgage banker, must take the greatest precaution and be sure that loans are not extended where the security is not adequate and where payments are not made with due promptness. For the most part bankers are just agents who bring together borrowers and lenders. The mortgage banker makes a loan upon a farm and then sells the mortgage to some individual or issues bonds and breaks it into parts and sells these various parts to various individuals who have saved some funds and wish to invest them. The commercial banker accepts all the small savings in his community from numerous individuals who wish to make bank deposits and in turn loan these or credit based upon them out to other individuals who wish to borrow for productive purposes. All of these obligations must be paid. The mortgage banker must see that the customers who buy his mortgages or bonds, receive their money when it is due and the commercial banker must be able to pay his depositors on demand. Consequently the farmer must manage his business so as to co-operate with the credit facilities of society.

Who Did Most for Farmers ?



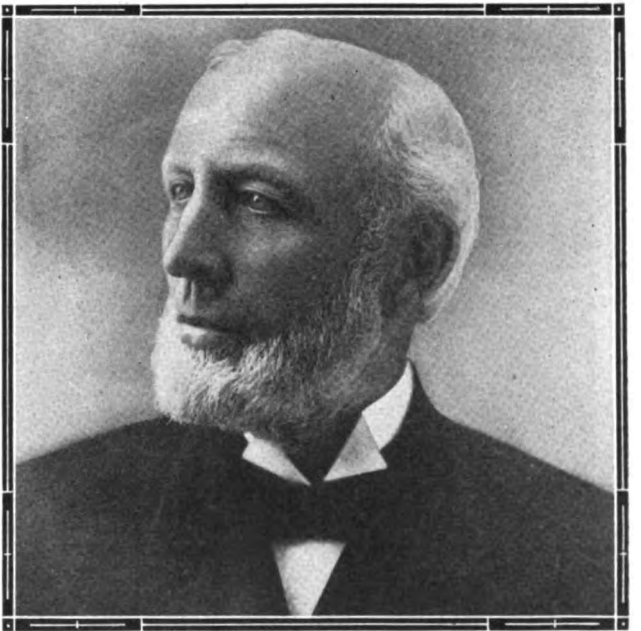
DR. JACOB G. LIPMAN takes his place among leading American men who are making modern scientific agriculture possible. He is well known thru his lectures and teachings as Dean of the New Jersey College of Agriculture and Director of the New Jersey Agricultural Experiment Stations. Because of his broad understanding of the nation's farm problems and his technical knowledge of soil fertility, chemistry and bacteriology, Dr. Lipman was sent to Europe by the United States Department of Agriculture to study conditions there immediately after the war. In the spring of 1922 Dr. Lipman was a United States delegate at the International Institute for Agriculture at Rome and also at the Third International Congress on Soils at Prague, where he was appointed chairman on Soil Microbiology for North America and Japan.



A MAN who played as great a part of service to the agriculture of the world as any single individual was **JAMES OLIVER**, founder of the Oliver Chilled Plow Works, South Bend, Ind., sixty-five years ago. Mr. Oliver, a farmer at heart and a foundry man by profession, after years of experimenting, invented the Oliver process of making chilled plows. By this process the grain of the metal in casting was set on end, with the result that a very hard, diamond-like wear-resisting surface capable of high polish, was presented to the dirt passing over the mould-board. The recognition of Mr. Oliver's invention was instantaneous and world wide. Mr. Oliver was born in Roxburyshire, Scotland, August 28, 1823. He died in South Bend, March 2, 1906.

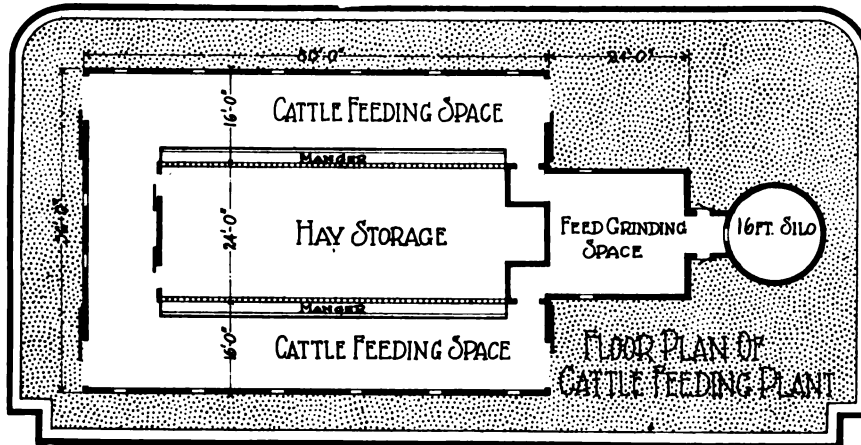


DURING the fifty years that have elapsed since **DR. J. C. ARTHUR**, professor emeritus of vegetable physiology and pathology at Purdue University, received his degree from Iowa State College, he has devoted a considerable part of his time to the study of rusts. His herbarium contains 46,000 specimens of rust from all parts of the world and many of his 248 publications are devoted to this subject, and many of the methods of control now in use are the result of his investigations, among them being the formaldehyde treatment for oats smut. Previous to 1888, when he joined the faculty at Purdue, Dr. Arthur was connected with the University of Wisconsin, University of Minnesota, and the New York Experiment station.

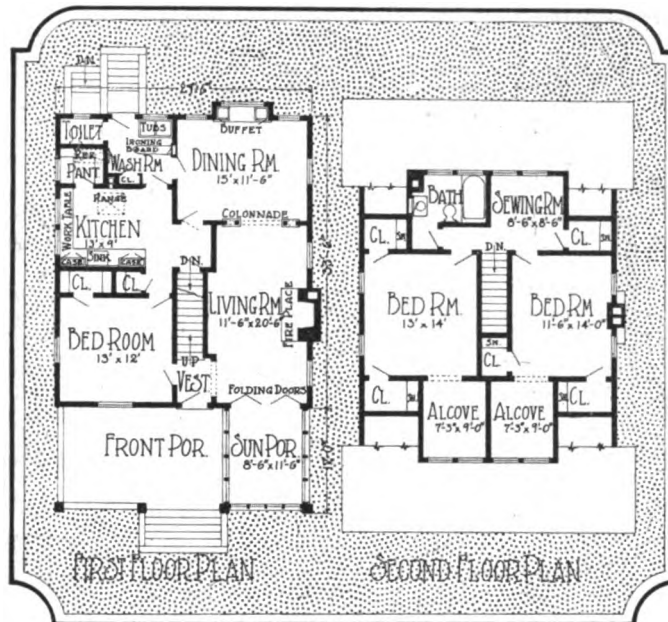


IN 1842 JEROME I. CASE, founder of the J. I. Case Threshing Machine Co., journeyed to Racine, Wis., from his native state, New York, taking with him six small threshing machines. Five of these he sold, and with the sixth became a journeyman thresherman. Two years later Mr. Case started in manufacturing threshing machines, incorporating some of his own ideas, thereby founding what is one of the largest manufacturing concerns of its kind in the world. From the original frame building where only a few men were employed the plant now covers 120 acres and employs 5,000 men. While neither the inventor of the thresher nor the original manufacturer of these machines, Mr. Case did much to bring them into general use, not only in this country but in all the wheat growing sections of the earth.

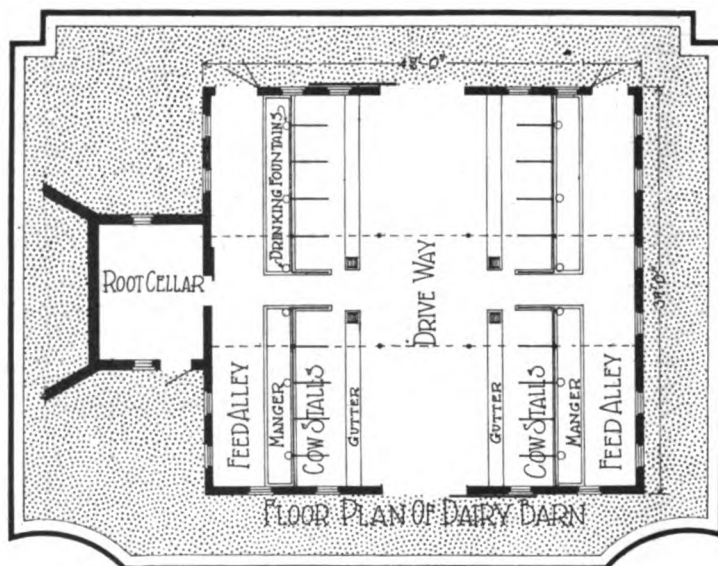
FARM MECHANICS BUILDING DESIGNS



BEEF CATTLE BARN. Plenty of storage space, with a good-sized silo adjoining are the requirements of the beef cattle breeders and feeders. Such a building is shown in the design above. An attractive building from the exterior, this combines plenty of storage space with space for loose animals. The floor plan shows the interior arrangement. Adjoining the silo is the feed grinding and mixing room, while the center of the building is devoted to hay storage. Around the building on three sides are spaces for the loose cattle and the self-feeders. The main building is 36 by 80 feet, while the feed room is 24 feet long, with a 16-foot silo adjoining.

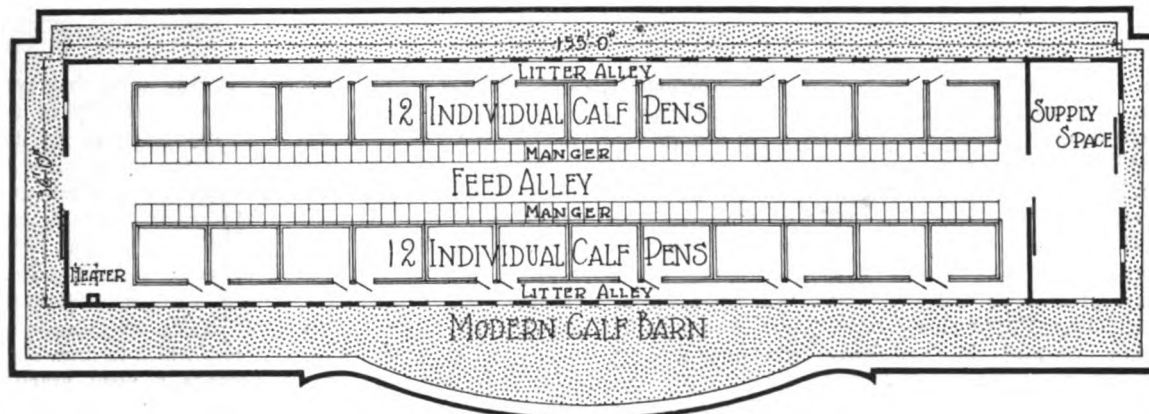


STORY-AND-A-HALF FARM BUNGALOW. Home-like is the word that describes this pretty little six-room farm bungalow. The building is constructed of frame with stuccoed exterior walls. The wide front porch with sun-parlor adjoining it is an attractive feature. The floor plans show four rooms, living and dining room, kitchen and bedroom on the first floor and two bedrooms, one in each gable on the second floor. Adjoining each bedroom upstairs is an alcove, with two windows in the dormer at the front. In the rear are bathroom and a small sewing room. This is an ideal home for a small family or will make an excellent design for a tenant house. The building is 27 feet, 7 inches wide and 36 feet, 6 inches deep.



GAMBREL-ROOF DAIRY BARN. Here is a barn design for the farm that has a dairy herd of 20 animals. The building has a tile foundation which extends to the first floor sill, above which it is of frame construction. On the stable floor there are four sets of stanchions, each having five stalls. The stanchions are set so that the cows face the feed alleys on either side of the building, with a driveway thru the center. The driveway leading into the second floor is on a grade, and underneath there is a root cellar for the storage of mangels and other root crops for winter feeding. At either end and over the center of the first floor are the mows for the storage of roughage. The building is 42 feet wide and 39 feet long.

FARM MECHANICS BUILDING DESIGNS



STEAM HEATED HOTEL FOR CALVES. The first few weeks of life is a dangerous period for calves. So breeders of pure-breds provide them with quarters where they will be reasonably immune from the diseases that quickly prove fatal. The design shown above is for a calf hotel, 155 feet long and 36 feet wide. On either side of a central alley are calf pens, each one of which has a door so that in case the occupant becomes sick it can be shut off from the others. The building has a concrete floor, under which and under the pens, or rooms, are steam pipes connected with a heating plant. Thus in winter the building is warmed. Weather-tight frame construction keeps the young animals protected. This building is designed for rather large breeding establishments.

Proper Seeding for a Bumper Crop

Correct Sowing of Seed Has as Much Effect on Harvest as Preparation of Seed Bed and the Cultivation of the Crop

By W. H. STORY

BEFORE trying to solve any problem it is well to analyze it and understand what you really want to accomplish. When a farmer starts into a field to sow it with grain, what are the real results he wants to accomplish? What is the ultimate object to be obtained? I would therefore, state his concrete problem as follows:

He should endeavor to sow a *measured* quantity of grain in a *measured* section of soil at a *measured* depth and so distribute the grain that each seed should have an average section of that field in which to germinate and tiller or stool out, and have an average portion of the soil from which to obtain its sustenance. Now if he accomplishes this result, he has an ideally sown field and he can reasonably suppose that there will be an even germination of the seed, an even growing, an even ripening and an even harvest.

Why should he not go out and broadcast his grain in the field like the ancients and as farmers of the less progressive countries still do today? In the first place, in broadcasting, no human being can place a measured quantity of seed on a measured section of soil. He will put more seed than bargained for or less on a given space because he cannot walk across the field and so distribute a measured portion of seed by hand without running out before he is across the field or he will have some grain left when he has finished. Moreover the best he can do is to sow the grain in bunches. Then the

wind will blow it away, the birds will carry it away, and the rain wash it away. Some will fall in crevices of the soil too deep to germinate, some will lie on top of the soil and never take root and a portion of it, of course, will eventually reach the correct depth and will germinate properly, while some will be sown at a shallow depth, get early germination and dry out at the first drouth. When the stand of grain comes it will of necessity be in thin and thick patches and there can be no even growing or ripening, and at the time of harvest the farmer will cut under-ripened, over-ripened and correctly matured grain at the same time.

In the attempt to solve the problem of correct seeding it was but natural that the modern grain drill would be developed, for the grain drill in the first place sows the seed in rows, which tends towards an average distribution. Now if you can get a grain drill that has a distributor or grain-sowing device so perfect that it will insure an absolute continuous stream or flow of a measured quantity of grain without skipping or bunching, and then conduct that stream down thru a tube so constructed that it will not break up the steady stream but direct it into a furrow opener that will open the soil and deposit this unbroken stream of grain on the floor or bottom of the furrow or trench at the desired depth and then cover each seed evenly again, you will have accomplished an ideal job of sowing. And what will this mean to the

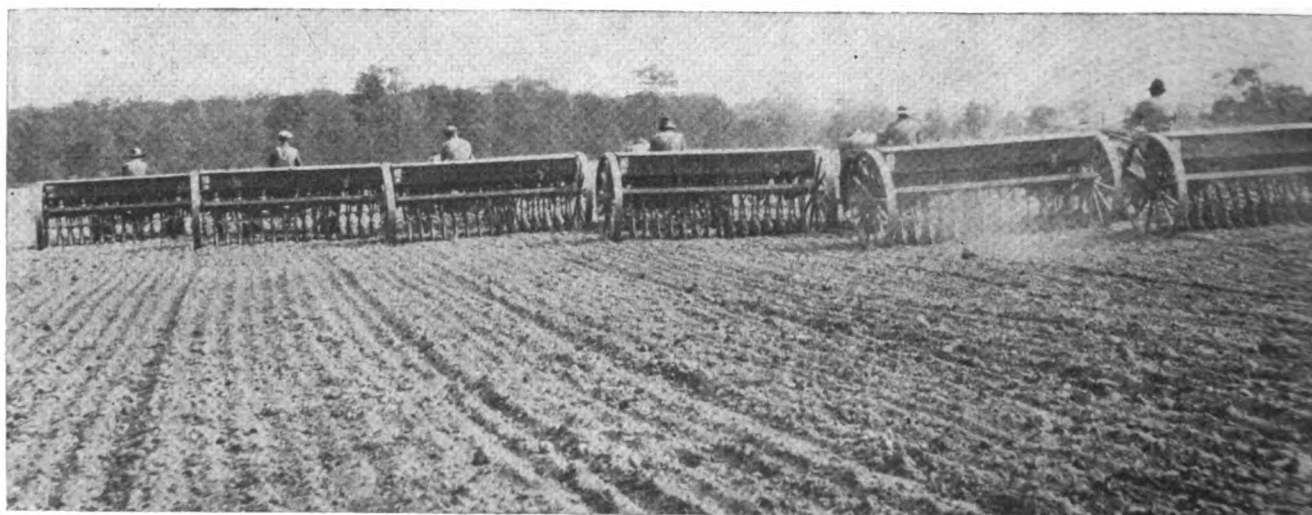
farmer? It will mean that every seed will germinate practically at the same time, for every seed will get its proper moisture and heat at the same time. It will mean that each seed will sprout and grow evenly, mature evenly, and insure a perfect harvest without any over-ripened or under-ripened grain. Each seed having been deposited at an even depth and having an average space of the field from which to draw sustenance, should produce a plant practically on the average of all other plants in the field and should head out and bear grain as nature intended it should.

In selecting a grain drill it naturally follows that the first thing a farmer should direct his attention to is the feed or grain distributor, which is the heart of a grain drill.

To illustrate the desirability of even spacing of the grain I give below the result of wheat experiments conducted by the Ohio Experimental Station at Wooster. The seeding in these experiments of course was done by hand and the distances carefully measured.

Rate per acre	No. of kernels in 100 in. of row	Average number of culms per seed planted	
		Good til- lering strain	Medium til- lering strain
One peck.....	25	9.8	7.8
Two pecks.....	50	7.0	7.0
Four pecks.....	100	2.6	2.1
Six pecks.....	150	2.4	2.5
Eight pecks....	200	2.2	1.9
Ten pecks.....	250	1.6	1.6

It is apparent in the first experiment that the 25 seeds produced 245 culms or stalks of wheat; while in the last experiment 250 seeds produced 400 head. But suppose that instead of being planted by hand the 25 seeds in the first hun-



A Good Job of Seeding. Note the straight rows and the furrows left by the discs that open the ground for the seed. The furrows prevent washing and as the frost and air crumbles the soil it drops around the growing grain giving it more strength and a better root growth.

dred inches (the rate actually sowed in many dry farming sections) were sown by a grain drill, that, while apparently sowing at the rate of one peck to the acre, would bunch or nest the seeds in the furrow say 3 or 4 almost on top of each other, it is apparent that you would get 25 plants to the hundred inches, but the culms or stalks per plant would be much reduced, say to 1.6 or 40 stalks instead of 400. Your yield of course would be cut accordingly. You would wonder why you did not get good results when you so religiously followed instructions of your Agricultural Department or County Agent. The secret of success of course lay firstly in the grain distributors and secondly in the furrow openers of the drill.

Now just a word about furrow openers. The single disc furrow opener is the most popular in America and used by the vast majority of farmers today. In fact, it is the first successful disc furrow opener put on the market, and it has made possible the sowing of wheat in those vast plains of America that never could have been worked with a hoe or shoe drill.

A disc furrow opener should perform four functions. It should first open a perfect trench in the soil without breaking down the side walls of that trench. This act should be accomplished by placing the angle of the disc blade at about $1\frac{1}{2}$ to 2 inches out of the line of draft, and of course the disc blades should have an under cut or suction (as they call it on a plow) of from $\frac{1}{4}$ to $\frac{3}{4}$ inch. Secondly, the shield of the furrow opener (that part that goes down in the furrow beside the disc blade and shields the grain in its fall) should not touch the outer wall of the furrow. Its function should be merely to say to any stray clod or dirt or trash that insists in falling into the furrow and mixing with the steady stream of grain being deposited in the bottom of the furrow, "Just wait a minute until I get by. Don't crowd. You will have your chance to fall back and cover the grain in a second, but you can't mix with it and spoil this even deposit at an even depth." And that is a very important thing for a farmer to consider. He may ruin his chances of a bumper crop with a poor furrow opener just as much as with a poor grain feed. Thirdly, a furrow opener should be so designed as to insure perfectly even covering of the grain after the deposit is made. A good furrow opener will just hold the soil up a fraction of a second, long enough for the seed to fall on the floor of the trench and then permit the soil to fall back. Drag chains are often used in some localities in aiding this result. Gang press wheels are used greatly in the



Drilling in Small Grain with Disc Drills and Tractors. This, however, is not a particularly well prepared seed bed.

middle west behind the furrow openers to compress the light soils and to conserve moisture. Fourthly, a good furrow opener should leave the seed bed in a serrated or furrowed condition as illustrated in the picture. This is a proposition to which few farmers give any thought when selecting a grain drill but it is highly important as I shall show.

First, the little furrows retain the snow which mothers the small wheat plants and supplies them moisture. Second, when the thaws come in the spring, the ground does not lift and bulge upwardly like it would if perfectly flat, but rather the ridges of the furrows break up and fall down around

the tender young plants. Moreover, and of vast more importance, the plants themselves are not lifted or bulged upwardly and consequently their tender roots are not broken or separated from the parts extending down into the still frozen earth not yet penetrated by the thaw. Winter killing has shattered many farmers' hopes for a good harvest, yet they blame nature, little suspecting that they could correct or cut down winter killing to a great extent by using a drill with a correctly designed disc furrow opener.

Of course there are many other important things to consider about a good grain drill such as a good frame and good wheels (particularly when work-



Side-hill Seeding with Drill and Tractor. The modern drill distributes the grain evenly in whatever position it is working.



Mules and Drill Working Under Difficult Conditions, but Seeding Evenly.

ing on hillsides), a good steady power transmission (no flapping or wabby drive chain), good tubes, lift and pressure devices, etc., but space cannot be taken here to go further into the subject.

I wish to summarize by saying that you can have the best farm in the country, the best soil, the best plows and tillage implements and you can prepare a perfect seed bed and add the best fertilizers, but you cannot get bumper crops unless you deposit your seed in the soil properly. You cannot sow Failure and reap Success, for proper seeding is the basis of all farm prosperity. Your grain drill is an asset or liability as told in the harvest. "As ye sow, so shall ye reap."



Jersey Black Giants **Breed now recognized as pure** **after half century of mating**

NEARLY fifty years ago, down in the central section of New Jersey near Jobstown, two farmers, John and Thomas Black, conceived the idea of breeding a

race of fowls which would better fulfill the requirements of the average farmers in their vicinity than any fowls which they had had before.

These men, together with other farmers, crossed Black Langshans, Black Javas and Dark Brahams in every conceivable manner, selecting in each generation the largest individuals and those which were nearest solid black in color. During the years which have intervened the advancement of the Jersey Black Giant has been a normal story of selection toward a more or less definite type.

The result of the work started by Mr. Black has been the development of a new breed of domestic fowl, one particularly adapted to the production of poultry meat. The American Poultry Association, in convention assembled at Knoxville, Tenn., August, 1922, recognized the Jersey Black Giant as an established pure breed of fowl and voted to include within the 1923 edition of the Standard of Perfection a description, as well as ideal picture, of the Jersey Black Giant.

This action by the national organization will have the effect of an immediate

stimulation of the breeding of Jersey Black Giants thruout the country. All breeders will have a common standard toward which to select and mate their fowls.

The author attended the convention along with the officers of the Jersey Black Giant Club, particularly for the purpose of securing this recognition for the breed which had been developed and perfected in the state of New Jersey.

The Jersey Black Giants are the largest fowls recognized by the Standard, the accepted weight being 13 pounds for the cock bird, 11 pounds for the cockerel, 10 pounds for the hen, and 8 pounds for the pullet. The plumage is a rich, lustrous black surface with a beautiful green sheen. The skin is yellow a characteristic demanded by the American market.

The breed has a single comb, red earlobes, and lays a brown-shelled egg of good size.

Among its characteristics are steady and comparatively rapid maturity, hardness, and strength of constitution and gigantic frame. The under-color adopted for this breed is whitish beneath the surface of the skin.

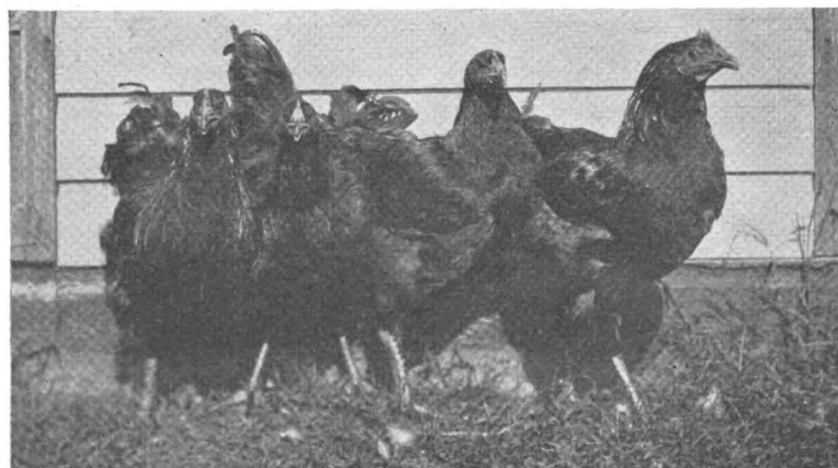
New Jersey poultry keepers can be justly proud of this fine new American breed which has been born and developed in our own state.



A Potato Story

WHEN they work together and try, farmers can learn a good many important things about crop production. One thing that makes work in any line attractive to the man filled with ambition is that there is always room for improvement. What a glorious blessing that is, when we stop to think of it. Here is a little story from Indiana that tells what some farmers learned about potato production:

"In checking up the results of the certified potatoes in Perry County, they were found to average about 238 bushels per acre, while the home-grown seed on the same soil with the same cultivation averaged about 95 bushels per acre by using the certified seed. This would be an increase of 143 bushels per acre by using the certified seed. Since 70 acres were planted with this seed, there would be a total increase of 10,000 bushels for having used certified seed. One farmer raised three times as many potatoes on the same size plot, same kind of soil, and the same kind of cultivation where certified seed was used as where the home-grown seed was used. The potatoes raised from home-grown seed were of a very poor quality while those grown from certified seed were of a good quality."



Pen of "Jersey Black Giants," Now Recognized as a Distinct Breed of Chickens.

How to Build a Radio Set

Outfit That Will Receive Messages from as Far as 1,000 Miles Can Be Constructed at Small Cost by Following the Directions Given in This, and Proceeding

Articles by Mr. Carr

By A. H. CARR

[EDITOR'S NOTE: This is the fourth and last of a series of articles that describe in detail how to build and operate a long distance Radio receiving set. Mr. Carr, the author, is an amateur wireless "fan," and constructed the set he here describes for his own use. It has proved very satisfactory, he having heard distinctly concerts given more than 1,000 miles away. The first three of these articles appeared in the October, November and December issues. The first three articles give complete directions for building the radio set. This article deals with its operation.]

Checking Tuner Wiring

WHILE the writer does not expect everyone who constructed this set to hear a distant station the first time he picks up the receivers, it is his desire that every builder may be able to enjoy broadcasts from his nearest broadcasting station after the few customary adjustments have been made as already described.

In the hope that each and every builder may enjoy success with his outfit a scheme will now be given by which anyone who has made a mistake in his wiring can check over his work in search of his error. The same scheme may be used in case something should happen to the wiring at any time.

In checking the wiring of the tuner a battery should be used. A dry cell such as used for a door bell will do, or wires can be connected to one cell of the six-volt battery. When one cell of the storage battery is used a current of about two volts will be obtained, which is all that should be used. Disconnect the tuner from the detector, the aerial and ground.

Now taking the lead wires from the testing battery touch one to the aerial post and scrape the other against the ground post. A spark should occur in this operation with the switch placed on any one of the switch points. Do not leave the wires connected this way more than an instant, as this is almost a dead short and uses up the battery current very rapidly. If you see a good spark as you scrape the wire over the post that is all that is necessary. This indicates that an electrical current is established and your work so far is O. K. Should you not receive a spark you have found your trouble and you must establish good con-

nections, soldering the taps leading from the winding if necessary. You absolutely must have good connections here.

Next try the two top posts in the right-hand end of the tuner panel. A spark should be obtained here. This indicates that the current can go into one post, thru the small coil of the vario coupler, then thru both coils of the grid variometer and out to the other post.

Next try the two posts below these. A spark should also occur here. This indicates the current can flow thru both coils of the plate variometer.

Now try the two posts of the variable condenser. You should not get a spark here. If the faintest sign of a spark is seen here your condenser is shorted and the trouble should be located and remedied.

If the tuner passes these tests you can rest reasonably sure it is in a working condition, provided your windings are not bare in some place and touching each other.

Checking the Detector Wiring

In constructing the detector we used an extremely simplified scheme for wiring the various parts. With the detector wired as directed the filament control jacks should automatically cut out the tubes not in use and turn on the current in the ones to be used.

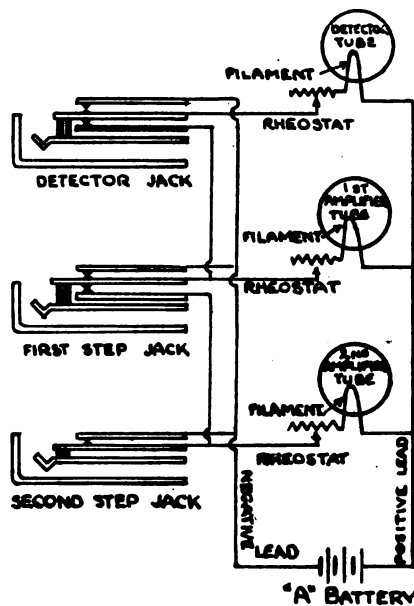


Fig. 15. Diagram for wiring the filament control jacks.

For the benefit of those who have been unable to get the jacks to work properly a simple diagram of the filament circuit is given in Fig. 15. In this diagram only the circuit supplying current for lighting the tubes is shown. In tracing this circuit just simply forget that there is any circuit other than the one shown. All other connections can be examined systematically after these are known to be correct.

When the plug is placed in the detector jack the second spring of this jack is pushed away from the third spring and presses against the first spring. This allows the current to flow from the battery thru this contact, thru the rheostat to the filament of the detector tube and back to the battery.

When the plug is placed in the first step jack the second spring is pushed away from its position against the third spring and pushed up against the first. This allows the current to flow thru two bulbs at the same time. The current going thru this contact "splits." Part of it goes thru the contact between the second and third springs of the detector jack and thru the detector tube. The other part goes thru the first amplifier bulb.

And when the plug is placed in the second step jack the first and second springs are forced into contact. This allows the current coming from the battery to flow in thru the first spring and out thru the second where it then splits. Part of it goes on thru the second amplifier bulb. The other part flows thru the contact between the second and third springs of the first step jack where it again divides, part going thru the first amplifier bulb and the other part going thru the contact between the second and third springs of the detector jack and thru the detector bulb.

With this information you should be able to trace any trouble in this circuit. All parts of the jacks, etc., which were not concerned in this circuit have been left out of the diagram for clearness. Where two wires cross over each other in the diagram and there is no connection between the wires a small hump has been drawn in one of the wires to show that there is no connection between the two at this point.

After all the connections in the tuner have been tested and the filament lighting circuit of the detector has been tried

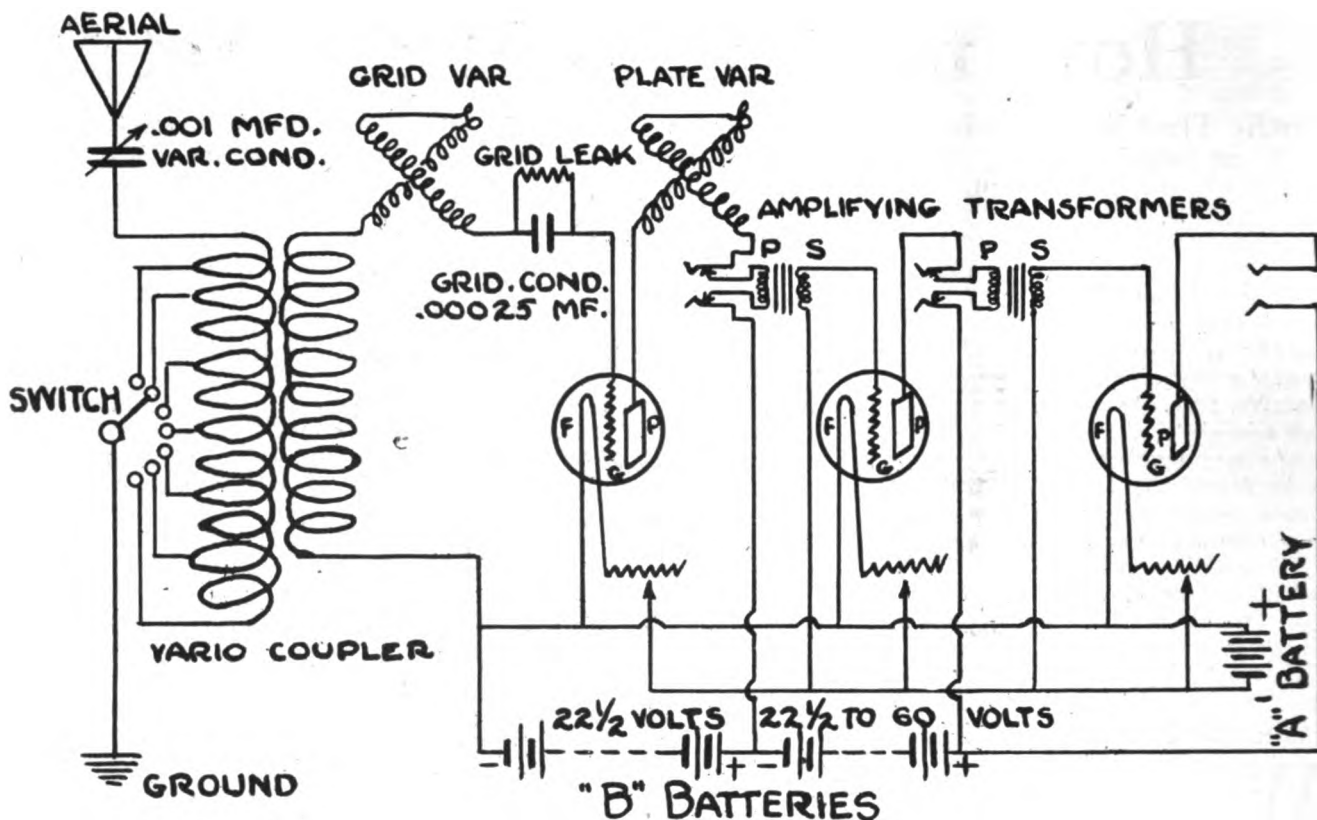


Fig. 16. Complete diagram showing how the radio set described in this series of articles should be wired. This is one of the important drawings in connection with these articles and the builders of the set should preserve it carefully, as with this he can check up his wiring.

out the constructor can check the remainder of the wiring. As the remainder of the wiring is coupled in so many places to the circuits already tested it is best to check these connections over by a diagram which shows the complete wiring of the whole set—batteries, tuner and all. Such a diagram is shown in Fig. 16. This diagram is made as simple as possible and diagrammatically shows all the parts of the complete receiving set. After a few minutes' study of this diagram and a few words of explanation the amateur should be able to easily trace over all his work in search of any possible error.

In studying the diagram you will first notice that the variometers and certain other parts are changed around in position. This was done for clearness and to avoid having so many lines cross each other. Where one line representing a wire crosses another a slight curve or hump is drawn in one of them to show that there is no connection between the two.

As the filament control jacks have already been explained they have been left out here for clearness and the filaments appear to be connected directly to the "A" battery leads. It can be easily seen that the detector jack and first amplifier jacks are so arranged that when the phone plug is inserted into either of them the circuit thru the transformer primary is broken and the current

is forced to go thru the phones. Immediately the plug is withdrawn the circuit thru the transformer primary is again established by the springs of the jack flying back into contact.

The signs and symbols used are the established ones which are shown in all articles dealing with radio, so if the reader familiarizes himself with them now he will be able to read other wiring diagrams if he has occasion to do so.

General Information

There are certain facts concerning the construction, upkeep and care of this set which either deserve special emphasis, or as yet have not been said. These things can probably best be called to the attention of the constructor by placing them together under a special heading.

The things which should receive the best of attention are, of course, the things which cost the most money. The storage or "A" battery heads this list. Were it not necessary to recharge or look after this battery a radio set would be almost as simple and easy to operate as a phonograph once it has been installed. Of course, the number of times you have to recharge this battery will depend on several things. First of all, the greater the amperage of this battery the more service it will give on each charge. There are fans who use only one bulb all the time and listen to the concert from their local broadcasting station nearly every

evening. With such service a large storage battery will work satisfactorily for about a month on each charge. But, of course, when two or three bulbs are used all the time for long distance work the service obtained from one charge will be considerably reduced.

Most of us have had something to do with storage batteries already in taking care of automobiles, so it will probably be unnecessary to go into detail here on the care of them. Those who do not know how to take care of these batteries can get this information at the service station with which they make arrangements for the recharging.

If desired, a small fixed condenser of .0025 Mfd. capacity can be connected between the two wires leading from the plug to the receiver cords. However, this is not necessary.

The best time—or, in fact, the only time—to test an untried set is at night when atmospheric conditions are at best. And the set should be tested at the time that the nearest large broadcasting station is known to be sending. If the sending station is very near first try one or two bulbs and if not very near try two or three bulbs. As the set is tested the grid leak can be varied.

And remember you will never receive so long as there is one poor contact in your set. In fact, most all the troubles encountered by the amateur are poor or broken contacts, and for this reason a

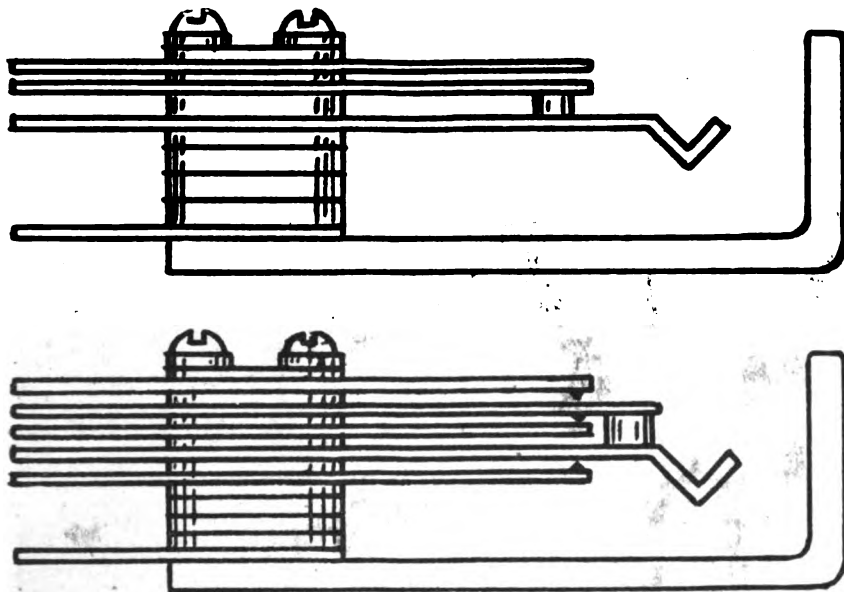


Fig. 17. Illustrating the position of the springs of the jacks when the plug is withdrawn.

checking diagram has been given.

Be sure the springs in the base of the tube sockets press firmly against the contacts of all the bulbs.

Certain little things have been left to the constructor's own ingenuity, such as connecting the wires leading from the rotor winding of the tuner. As you remember, these two wires were to go to the binding screws which were placed one on each side of the rotor shaft. These two wires were to be connected with play enough given to allow the rotor to turn at least half a turn. A good way to do this little stunt is to give each of the wires a turn or two around the shaft before connecting to the screw. The wires will then have the appearance of a loosely coiled spiral spring slipped onto the shaft. This little arrangement will allow plenty of play in the shaft.

The foregoing instructions should be ample to enable the constructor to build and operate this set with ease. But, remember, do not expect too much of a radio set until you have experimented with it considerably and learned its particular characteristics by tuning for your nearest broadcasting station, whether you have made your own set for a few dollars or bought one for hundreds of dollars.



A Practical and Commodious Auto Locker

ILLUSTRATED here is a particularly practical and commodious home-made locker for the automobile. It is, of course, intended for taking care of such articles as one may wish to leave in the car while it is parked, either in the daytime or at night; and possessing one of

the kind here shown one may be reasonably certain that the things so left are going to be safe from thieves during his absence—provided the automobile itself is not taken. It is of quite ample capacity to hold the robe, a coat or two and even a goodly supply of groceries or other purchases.

The locker, it will be discerned, is an equipment of a touring car, and is placed just back of the front seat. Built with a sort of backward inclination at the top to conform to the slope of the back of the seat, it is, in outside dimensions, about 12 inches wide by 20 inches high and 2 feet, 3 inches long. It is constructed of 1-inch material and completely covered outside with tin, which is painted black to match the car. It is securely bolted to both the seat and to



Locker in Auto to Protect Robes and Packages.

the floor, and is equipped with a hinged top and a padlock.

Naturally, the size of such a locker may be varied to suit the space available for it.—CHARLES ALMA BYERS.



Charging Car Battery With Light Plant

CAR owners with electric light plants can charge their storage batteries with the generator. It is popularly supposed that to charge a six-volt battery, special equipment is imperative. And it is when the current is to be taken from a 110 or 220-volt line.

The majority of individual lighting plants are provided with apparatus for charging a 32-volt battery which comes with the outfit. Almost invariably the voltmeter has a capacity exceeding 32 volts by 10 or 20 volts. The addition of the six-volt battery into the charging line will only raise the normal voltage from 32, then to 38, which still brings the range within the capacity of the lighting plant.

Whether the car is to be used or not during cold weather the battery should be kept charged. If the car is used, the battery is used much more severely than during the warm months, principally because it takes longer to start the engine during winter.

Disconnect one wire from the 32-volt battery and connect it to the car battery, first making sure of the polarity. Then connect the other six-volt battery terminal to the 32-volt battery terminal and charge in the usual manner.

Usually the small battery will have less capacity than the larger one, so, to prevent over-charging, it will be necessary to use the hygrometer and, when the car battery has been fully charged, remove it from the line and again connect up the lighting plant in the usual manner.—DALE R. VAN HORN.



Become Bull-Conscious

BECOME bull-conscious and you will sell your bulls; if not for a large price then for a small price plus the gratification that comes from doing a useful service to one's fellowmen and also plus the assurance that always one good purebred bull makes a market for another and yet another. The one who uses a grade or scrub bull needs only to consider with a fair degree of seriousness the losses he is thereby sustaining and the profits he is sacrificing to become bull-conscious. Surely no man who milks cows can knowingly use a sire that is holding butterfat production to a basis of actual loss and not reach the point where he experiences sleepless nights.



The Residence and Seed House of E. W. Burgess, Near Galesburg, Mich.

Take the City "Back to the Farm"

Electricity Gives All the Conveniences to the Modern Farm Home, as
E. W. Burgess Has Found at His Michigan Place

By F. J. ST. JOHN

FOR every harvest there must be a seed time. For the seed time there must be a seed man. And that's where E. W. Burgess comes in.

Michigan has a goodly share of trained, experienced men whose business it is to grow and to distribute seeds of desirable varieties and of approved standards, and among these men is E. W. Burgess, over in the neighborhood of Galesburg.

It is not our purpose to dilate upon the seed business which Mr. Burgess has developed. What impressed us and what we want to talk about is the home and the plant which Mr. Burgess has created out along a country road where, a few years ago, there was no home nor plant nor business.

What Burgess has done is a fine object lesson for the business man who tires of the confinement of the city and who would take his family and flee to some rural district—if only he could take along some of those comforts and conveniences, like electricity and running water, which every modern family regards as necessary to a well-ordered existence.

It is still a fact that many of the men and women in our cities spent their young manhood and womanhood on the farm. They still carry memories of

country life as it was lived when they were young. They remember the unpleasant combinations of hardships and hard work that the boys and girls in those days went thru with.

They are the folks who today will smile the broadest and nod their heads the hardest when somebody starts a song about the happy boyhood days "Down on the Farm." They will keep on smil-

ing and nodding as long as they think they are not likely to be living "Down on the Farm" again. But they won't consider life on the farm for themselves, for the picture that they automatically envision is one of themselves plunged back into the very life they left the farm to escape.

But most any tired business man would be glad to move out into the enjoyment of a home such as the Burgesses enjoy. Here are the clear, pure air of the country, the wide spaces that hold no suggestion of crowding, the possibilities for fresh fruits, fresh vegetables and eggs whose virtue and uprightness are beyond all question.

Here, in addition, is a modern house, delightfully planned and constructed, and equipped with all the features of comfort and convenience which we demand in a home anywhere today. Not all modern homes are well-planned. This is an unfortunate fact but a fact, nevertheless. Not many people have the imagination, the creative ability that will enable them to see a thing until it is actually built, until the material structure takes shape before their eyes. So it is that many houses are monstrosities.

In the Burgess home, beauty and utility are combined and I suspect that whoever built it knew pretty well what



Mr. and Mrs. E. W. Burgess and Son in Front of Their Modern Country Home.

they were doing. The results, at any rate, are tremendously pleasing.

I was particularly interested in the electric service which the Burgesses enjoyed. They were out in the country beyond the range of any central station current so they had put in their own electric plant. And, since they felt their requirements were a little larger than ordinary, their electric plant is one with larger than average capacity. This plant is about 3-kilowatt size, 110-volts.

First, and most important of the services which electricity gives them is for light. Electric lights are provided for the residence complete, for yard lights, for the two-story seed house and the smaller, surrounding buildings.

The plant is run chiefly to charge the storage battery, and current for lights is taken right from the battery at any time, day or night. There are no "off" hours, when there is no current. There is plenty of electricity twenty-four hours a day, at the Burgess home.

Nor is the current expensive. Kerosene is used for fuel and motor oil for lubrication. These materials are the only items of expense in the operation of the plant. About a half-pint of motor oil and a gallon of kerosene will produce around four kilowatt hours of electricity. The cost for fuel and oil, therefore, will approximate five cents, or thereabouts, per kilowatt-hour.

Now, if they get only electric lights for their home and seed business, I judge the Burgesses would feel pretty well repaid. But this is only a small part of their electric service. Two different models of pressure water system, purchased at different times, are installed side by side in the basement of the residence and run with electric motors. One of these water systems forces soft water to the kitchen faucets, to the laundry and bathroom. The other

is connected with the well and provides water for drinking purposes, sprinkling, and the like.

Perhaps it should be remarked here that the installation of two water systems as Mr. Burgess has them is not always necessary. One can use a single system to pump two waters if both waters are pure enough for drinking purposes. There will be a slight mingling of the waters with the changing of the two-way valve. The pump will operate automatically for, say the well water. It must be changed over by hand when it is desired to pump from the cistern.

Up in the seed room Burgess makes an interesting use of electricity. This is in the operation of a seed germinator, a pretty important adjunct to the seed business. If one is to realize the harvest which he has in mind when seed time comes around, he must be assured that the seeds will sprout. The seed



Running Water in the Burgess Home Is Supplied by a Modern System Run by Electric Power.



Germinating Room in the Burgess Seed House. The germinators are operated by electricity from the individual light plant.



Electricity Supplies Mrs. Burgess with the Modern Home Labor-Saving Devices.

germinator, as perhaps you know, is a big testing case. So many seeds from a certain lot are placed in the germinator. The air is kept moist and warm by means of electric heat applied to water in the germinator. So, ideal germinating conditions are maintained for the requisite time, the little seeds are examined and the percentage of germination possibilities in the lot is quickly determined.

The big room where we observed this germinator is also the packing room and, at certain seasons, we were advised, this is a very busy place. Rush seasons, ahead of annual seasonal seed times, call for considerable night work. Here, of course the electric lights play an

important part. Much of this packing is what would be called "close" work, which would be trying on the eyes, if it were not that there is plenty of electric light wherever it is needed.

The power uses of the electric plant here, as has already been intimated, are pretty important. The usual chores about the house are done with electricity and, at the seed house, job presses are operated with electric motors.

The Burgess seed business is essentially a family business. Of course, during the heavy seasons a great deal of outside labor is employed. E. W. Burgess has a valuable aid-de-camp.

(Continued to page 46.)

Operation and Care of Tractor

Some of the Troubles the New Owner May Experience and How to Meet Them

The Third of a Series of Three Articles, the First Having Appeared in August, Farm Mechanics

By F. M. SERVICE

Motor Knocks

Carbon in Cylinders—The oil that is left in the combustion chamber after each stroke of the piston is burned up on each explosion of the motor, and this burnt oil and unexploded residue from the gasoline or kerosene mixture is turned to carbon by the heat and deposited on the cylinder walls and piston heads. When a sufficient quantity has gathered, it becomes very hot and has a tendency to explode the charge in the cylinders before the piston has reached the point where the spark plug fires the charge. This premature firing has the effect of trying to drive the piston back down before it reaches the top of its stroke, but the momentum of the flywheel carries the piston over and there is produced as a consequence a very distinct knock. This is only heard when the motor is picking up under a load, and as soon as the strain is relieved, by the motor gaining speed, the knock disappears. This knock can easily be told from any other, as it is a clear, hollow sound, much as tho a tin pan were rapped steadily. When this condition has developed in a motor, there are only two good methods of removing the carbon. First, by removing the cylinder head and scraping the carbon away from the cylinder head and the tops of the piston. The second method is used where the motor does not have a detachable cylinder head, and is accomplished by burning the carbon away thru the

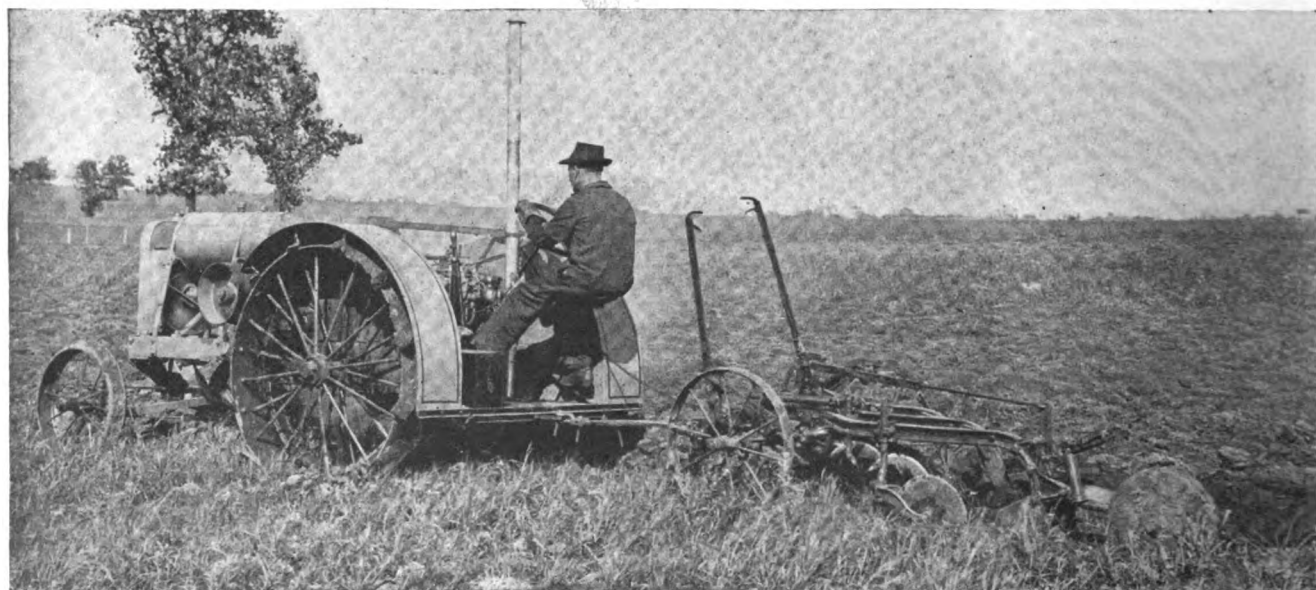
use of a small stream of oxygen, fed and ignited thru a valve put on a spark plug hole. The scraping can be done by anyone handy with tools, but the use of oxygen requires an experienced mechanic.

Loose Connecting Rods—A loose connecting rod bearing will produce a sound like the distant tapping of steel with a small hammer and is only distinctly heard when the motor is running free or after it has gathered its load and is not under a strain. To tighten the connecting rod bearings just enough shims or metal should be removed from the bearing caps to take away the play, allowing about .001 of an inch play between the bearing and the crank shaft to allow an oil film between them. If the bearings are taken up too tight the motor may not be able to turn over, or if it is started will likely cut the crank shaft and babbit of the bearings.

Loose Main Bearings—A loose main bearing will be distinguished when the tractor is pulling hard and the sound produced is a dull thud, heard at every revolution of the motor. The method in eliminating this play is the same as is used in taking up the connecting rod bearings, except that each bearing must be taken up separately and then loosened up, until all of them have been adjusted. They should all be then tightened and if the work has been properly done, there will be a slight stiffness to the motor when cranked.

Loose Piston or Wrist Pins—A loose piston or piston pin resembles a sharp rattle more than a knock and will be heard when the throttle is suddenly opened. If very loose the rattle will continue steadily as the motor gathers speed. Where the trouble is in the wrist pin, it can be remedied by replacing the pins with oversize ones, just enough larger to take up the play. Loose pistons are more serious as it requires the complete tearing down of the motor and the re-grinding or re-boring of the cylinder walls to a larger size and refitting of new pistons and rings. If the play is not excessive, it is sometimes possible to fit or lap in oversize pistons in the cylinders without regrinding, but this should only be done where a careful inspection of the walls show that they are perfectly round and not worn egg-shaped.

Spark Advanced Too Far—Where the spark is advanced at the distributor or magneto breaker too far, the same effect will be had as carbon will cause, namely, a tendency for the motor to fire before the piston reaches dead center and the resulting knock will be of the same sound as produced by excessive carbon in the cylinder. This knocking will cease when the spark is retarded and the motor will be seen to pull much more freely and with more power. Where this trouble is found, the spark rod should be shortened so that when the spark lever is in the advanced position or where it is placed when the motor is pulling, the motor



Keeping the Tractor Modern in Repair and Good Running Order not Only Greatly Prolongs the Life of the Tractor but Makes It Capable of doing an Immense Amount of Work.



Discing Standing Corn Stalks Before Plowing Chops the Fodder and When It Is Turned Under Supplies the Soil with Humus and Plant Foods. This work requires power and the tractor supplies it.

will develop its maximum power and speed.

Motor Overheating—This again causes a preignition knock the same as an advanced spark or excessive carbon, except that the motor will, of course, become very hot and will often continue to run and knock after the ignition is shut off.

Gasoline or Kerosene Mixture Too Rich or Too Lean—Too rich a mixture will produce a dull rolling knock in a motor, when the throttle is opened up quickly and can be distinguished by the sluggish way the motor picks up and the excessive smoke issuing from the exhaust pipe. Too lean a mixture will cause a motor to labor and knock unevenly when accelerated and at the same time a loud popping back will be heard thru the exhaust valves, due to the lean mixture not burning fast enough in the cylinders.

Transmission Troubles

Gears Jump Out of Speeds—A poor adjustment of the shifting yokes will cause this, due to the small plungers that lock the gears in place not dropping into their places or notches. Worn or badly chipped gear teeth will also cause the same trouble, and this can be discovered by draining out the transmission oil and inspecting. If the gears are found to be in bad shape, there is only one thing to

do and that is replace them with new ones.

Gears Clash When Being Shifted—This is caused by the clutch not properly or completely disengaging, causing the gears to continue to spin after the clutch has been thrown out. Warped or burnt clutch plates or the adjustment of the clutch are the causes, and the necessary repairs should be made as the transmission gears will be damaged if continually clashed.

Gears Grind When in Speed—Broken or badly worn transmission bearings or gears are the cause of this grind and where this trouble has developed the transmission should be taken down and all parts carefully inspected and the worn parts replaced.

Noisy Driving Chains—Where chains are used as the final drive, they sometimes become very noisy. This is generally due to their being poorly lubricated. The best thing to do is to remove them and boil in a strong solution of lye and water. After they are replaced keep well greased and oiled. If they are enclosed, oil is the best lubricant, and, if exposed, use heavy transmission oil or cup grease.

In Conclusion

Practically all the above troubles, outside of the things due to poor adjust-

ments or defective parts, will never happen to your tractor if you will give it the care and attention it should have, and it can truthfully be said that the life of a tractor depends on its operator plus its care and maintenance during the first few weeks of its use. We are, therefore, quoting a few suggestions that if followed will greatly aid the new owner in successfully getting the greatest efficiency at the lowest cost out of his tractor.

1. A new tractor should never be run at its maximum speed for at least the first month.

2. Never race the motor, outside of the tremendous waste of fuel more motors have been ruined by racing than ever worn out under actual work.

3. Do not allow the motor to run long with the spark retarded. This causes it to overheat and rapidly accumulates carbon.

4. It is best to change the water in the cooling system every day for a while, as the excessive heat of a new motor has a tendency to drive off the air held in suspension in the water.

5. In a new motor there are fine particles of cast iron, etc., which are loosened up by the action of the pistons and bearings and find their way into the crankcase, hence it is advisable to change the oil in the motor often at first, before



Mowing with the Tractor. This method is used on motorized farms and the amount of ground covered in a day makes it possible to take advantage of the best weather conditions to insure a well-cured crop.

this matter has a chance to cause damage. Even after the tractor has loosened up the oil should be changed frequently as a tractor operates at a very high heat and rapidly causes the lubricating quality of the oil to break down.

6. Do not allow the motor to labor too hard on high or second speeds. It is much cheaper to shift gears than buy new parts.

7. And finally, don't forget that the entire performance of your tractor depends on the lubrication given it and that the very best grade of lubricating oil and greases are always the best in the long run.



Take the City "Back to the Farm"

(Continued from page 43)

however, in Mrs. Burgess, who has her own part in the conduct of the business, and whose faithfulness to her job has much to do with its success.

It is gratifying to observe homes like this and to be able to point out the fact that people can live comfortably and well in the country. So many people have not come to realize this yet. This includes not only the people who are now living in comparative discomfort in the country, but also those folks who, dissatisfied with the city are hesitating about moving out into the country because of the hardships which they believe are there.

It is not necessary for one to live in discomfort in the country. One can enjoy all the comforts of the modern home in the country, as well as in the city. And electricity will open the way for the enjoyment of every feature of the modern home which every homeowner today, city and country, ought to be enjoying.

The electric plant makes electricity possible in the country. There are no usual needs for electricity in the country which the electric plant will not supply, and it is not necessary for anyone to hesitate or worry about how they will get along if they move to the country.

Many people are not aware, tho it isn't a secret, that thousands of other people today are using electricity in farm homes and country homes, electricity secured from their own electric plants. More people are going to know it, however, in the next few months, for the idea is immensely popular and folks who have not yet accepted it will not allow their neighbors, already using it, to go on alone, enjoying this modern force which can be had so easily by anybody who really wants to use it.



Scalding Barrel Still Efficient

THE old-fashioned scalding barrel is still efficient for butchering time on the farm if only one hog is to be killed, according to the New York College of Agriculture, but if more than one is butchered, an iron kettle is better. If several hogs are to be scalded, a fire pit can be dug underneath, and the kettle raised on bricks or railroad irons so that its top is level with the scraping board.

Old hands at the game say that the hog should not be killed until the water is ready—heated to 160 or 165 degrees F., with pine tar, wood ashes or lye added to help remove the scurf, if desired—and that the carcass should be put into the tank just as soon as it is dead, with the head and feet kept well under the surface.

Rolling the carcass in the barrel or tank insures a uniform scald. When the hair slips from the head and feet, the

hog is ready to take from the water. These parts are scraped first, and the rest of the body is done as rapidly as possible, with scraping discs, blunt knives, corn knives, or hoes. The carcass is finally hung up to cool.



Clovers Make Hay and Help the Soil

GROWING and harvesting red clover is almost like eating your cake and having it. They have found that the clover may be used for hay, and the second growth and sod plowed under to add nitrogen to the soil. These clovers are frequently grown in three-year rotations with corn or potatoes coming first, followed by oats, and the red or alsike clover last.

In cases where the soil is very much depleted it may pay to let the clover grow undisturbed thruout the season and plow under the whole growth for soil improvement.

If the soils are in what they call "fair to good condition" the second growth and sod will probably return enough nitrogen to the soil, altho in either case lime and phosphorus should probably be added in sufficient quantities to insure a good growth of clover.



HOW much are you worth above your debts? Take an inventory and find out.



THE worthlessness of poor quality bulls lives after them—in their low-producing daughters.



HOW many empty jars and other useless odds and ends do you dust around every day, when they might just as well decorate the top pantry shelves.

Look to Your Tractor Now

Chart of Recommendations

Trade Name	Motor Oil	Trade Name	Motor Oil
Alcoa	H.	Magnet B.	H.
Alco-Chalmers—All Models	H.	Mark VI Once Over	H.
Alled	H.	Midwest	E. H.
All Work—Both Models	H.	Minneapolis, 12-25 and 17-30	H.
Andrews-Kinkade	E. H.	Minneapolis, 22-44 and 35-70	E. H.
Appleton	H.	Mogul	H.
Armington	H.	Mohawk	H.
Aultman-Taylor, 22-45	E. H.	Monarch-Industrial	H.
Aultman-Taylor, 30-60	E. H.	Nilson Junior & Senior	H.
Ayltman-Taylor, 15-30	E. H.	Ohio	H.
Automotive	H.	Oil Gas, 20-42	E. H.
Avery Model C	H.	Oil Gas, 25-50	E. H.
Avery, 8-16, 12-25, 25-50	H.	Parrett	H.
14-28, 18-36, 40-65	E. H.	Peoria	E. H.
Avery Tractor Runner	H.	Pioneer, 18-36 and 30-60	E. H.
Bates	E. H.	Plow Man	H.
Bates Steel Mule—All Models	H.	Porter	H.
Bear	H.	Port Huron	H.
Best Tractorlayer, 20	E. H.	Prairie Dog, 10-18 and 15-30	H.
Best Tractorlayer, 60	E. H.	Quadpull	H.
Big Farmer	E. H.	Reed	H.
Big Four, E-B	E. H.	Reliable	E. H.
Biltwell	H.	Rex	H.
Boring	H.	Rumely Oil Pull, 12-20	E. H.
Burnoil	E. H.	Rumely Oil Pull, 16-30	E. H.
Capitol—All Models	E. H.	Rumely Oil Pull, 20-40	E. H.
Case, 10-18 and 15-37	H.	Rumely Oil Pull, 30-60	E. H.
Case, 22-40	E. H.	Russell "Big Boss," 20-35	E. H.
Case, 20-40	E. H.	Russell "Giant," 30-60	E. H.
Cletrac, 9-16 and 12-20	H.	Russell "Little Boss," 15-30	H.
Coleman	E. H.	Russell "Junior," 12-24	H.
Common Sense	H.	Samsen Model M	H.
Dakota	H.	Savage A	E. H.
Dart Blue "J"	H.	Shawnee, 6-12 and 9-18	H.
Depue	H.	Shelby Model C	H.
Dill Harvesting	M. H.	Shelby Model D	E. H.
Eagle, 12-22 and 16-30	E. H.	Square Turn	E. H.
E-B, 9-16 and 12-20	H.	Stinson Heavy Duty	H.
E-B, 16-32	H.	Titan	H.
Farm Home	E. H.	Topp-Stewart	H.
Farquhar, 15-25	H.	Toro	H.
Farquhar, 18-35 and 25-50	H.	Townsend—All Models	E. H.
Fordson	H.	Traylor	H.
Flour City Junior, 20-35	H.	Triumph	E. H.
Flour City, 30-50 and 40-70	E. H.	Trundaar	H.
Fox	E. H.	Twin City, 12-20 and 20-35	H.
Four Wheel Drive Fitch	E. H.	Twin City, 40-65	E. H.
Frick, 12-20	E. H.	Twin City, 60-90	E. H.
Frick, 15-28	H.	Uncle Sam—All Models	H.
Good Field	H.	Vim	H.
Grain Belt	H.	Wallis	H.
Gray	H.	Wallis Cub	H.
Great Western	H.	Waterloo Boy N	H.
Hart-Parr—All Models	E. H.	Wellington, 12-22 and 16-30	E. H.
Heider—Model "C"	H.	Westmore	E. H.
Heider—Model "D"	H.	Western	E. H.
Holt Caterpillar, T-35	H.	Wheat	E. H.
Holt Caterpillar (5 Ton)	H.	Whitney	E. H.
Holt Caterpillar (10 Ton)	E. H.	Wichita	H.
Holt Caterpillar (15 Ton)	E. H.	Wilson	H.
Huber Light & Super Four	H.	Wisconsin, 16-30 and 22-40	E. H.
Illinois Super Drive, 18-30 and 22-40	E. H.	Yuba Ball Tread—All Models	H.
Indiana, 5-10	H.		
International, 8-16	H.		
International, 15-30	H.		
J. T.	E. H.		
Keek Connerman	E. H.		
Kinnard	H.		
La Cross	H.		
Lauson, 12-25 and 16-30	H.		
Leader, 18-36	H.		
Leader, 12-18 and 16-32	E. H.		
Leader, 18-35	E. H.		
Leonard Four Wheel Drive	H.		
Liberty	E. H.		
Little Giant A. & B.	H.		
Lodon Model 18, 12-25	H.		

N. B. For recommendations or grades to use in automobiles and trucks consult chart at any Standard Oil Co. (Indiana) station.

THIS is the time to get your tractor in shape for the early spring plowing and planting.

When the spring rush is on, the earning power of your tractor will be in direct ratio to the manner in which you tune it up now.

Be sure that every bearing and every frictional surface is lubricated thoroughly and correctly, as it will be if you

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Polarine

THE PERFECT MOTOR OIL

Made in Four Grades

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Medium Heavy Heavy
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Polarine seals your pistons against loss of power, thus enabling you to get a maximum of service from your fuel. In making Polarine, the Standard Oil Company (Indiana) lubricating engineers have taken into account clearance between the pistons and cylinder wall, method of cooling, lubricating system used, etc.

The Standard Oil Company (Indiana) staff of lubricating engineers recommend Polarine as the correct oil for your tractor. This recommendation is authentic and based upon the scientific findings of this board of experts.

Polarine is the Perfect Motor Oil, and is offered to you as such. Consult the chart to the left. It represents the correct grade of Polarine for every make and type of tractor.

Standard Oil Company

910 South Michigan Avenue, Chicago, Illinois

Is Your Water Supply Safe?

Most Everyone Speaks of "Pure Spring Water," But Springs Are as Liable to be Contaminated as Wells or Streams

By A. E. HIGHSMITH

"SAFETY FIRST" is a mighty good rule to follow when determining the source of the farm water supply. The great majority of farms secure water from either a well, cistern or spring. The location of the former two sources in relation to pollution from the surface, such as the barnyard, can be regulated. Springs, however, are where Nature placed them, and are as apt to give forth contaminated water, as a wrongly located well.

A safe water supply from a well requires that it be located on high ground, so that there is a slope toward the barnyard, privy or stable. The top

should be protected by a concrete or masonry curb that is higher than the surrounding ground. This prevents seepage of surface water into the well. Even in this location care should be exercised that the ground nearby the well should not be higher than the surface of the well, as soiled water, or water underneath the surface flows towards the nearest stream and will get into the well. When water travels considerable distance after it soaks into the soil it is purified by filtration.

Springs are three types: the deep spring, the flow not being influenced by droughts; the shallow spring, which is merely an emission of seepage water

and often becomes dry when there is a drought, and the large spring, which usually is a stream that disappears under ground and comes out again at another place. Of these three, the deep spring is more apt to give forth pure water than the other two.

To further insure that the water from the spring remains pure, it should be protected by a curb that rises higher than the land surrounding it. More often than not, the mouth of a spring is in a low spot, and unless there is a large flow surface water will remain in it long enough to cause some pollution.

There is a mistaken idea that all spring water is pure. "Pure as spring water" is a common expression, but one that should be disregarded.

Lake or pond less than 100 acres in extent is not a good place to get a supply of water. This is especially true if the land around it is cultivated, or if there are inhabited houses near the shores.

Danger in water supply comes when the filth of the earth is carried into the water and does not remain exposed to the action of sun and air, which will destroy bacteria if given the proper length of time. Away from air and sun, the germs develop and multiply, oftentimes forming typhoid and diarrhoea germs.

Twenty-five gallons of water per person is the amount required from the water supply, unless it is used for watering cattle or sprinkling the lawn. Then it should be not less than 100 gallons per person, or more if many animals get their water supply from it.

Too great care cannot be exercised in fixing upon the source of the family water supply. For on it depends greatly the health of the family.



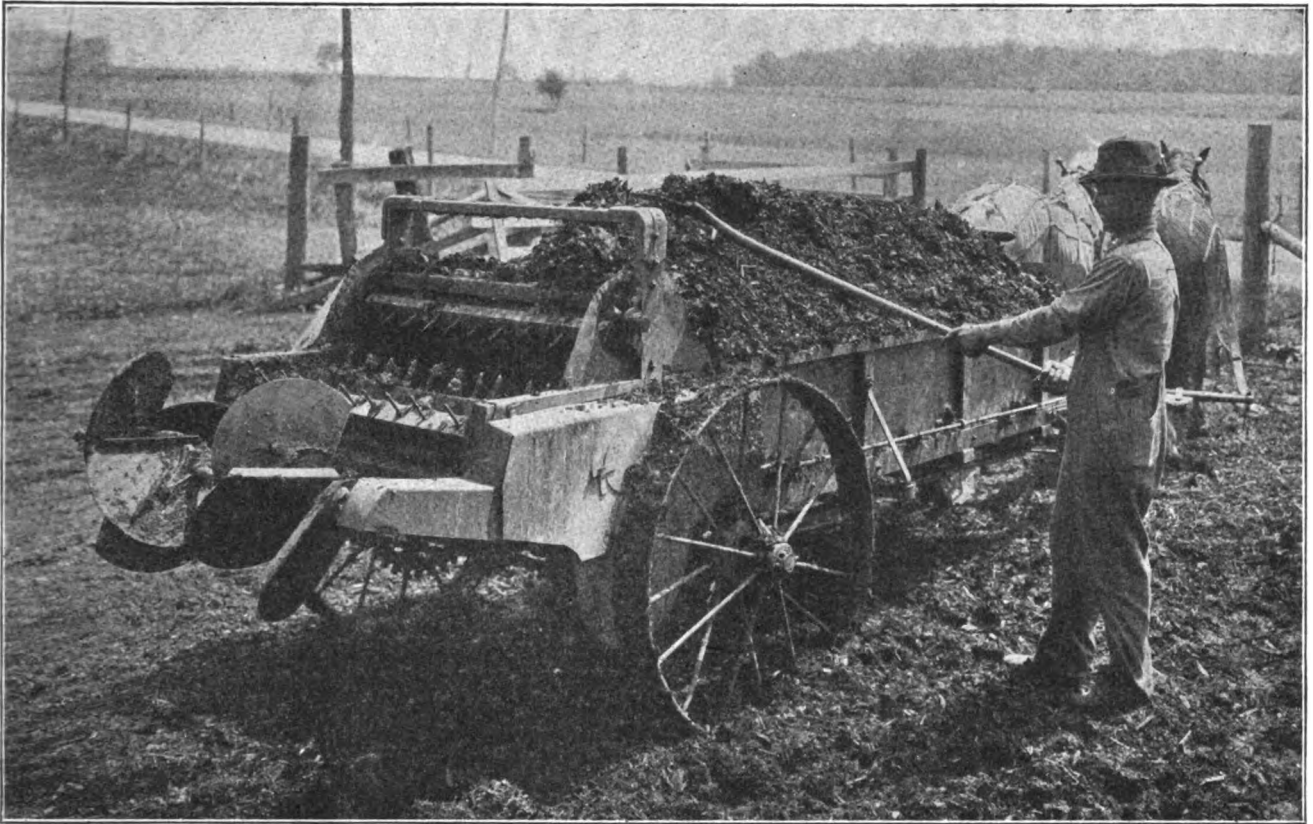
MORE than four million barrels and an equal number of boxes of apples went into cold storage by Nov. 1, according to Federal crop reports. Cold storage holdings for Nov. 1, 1922, break all previous records.



IN two months "Adeline Hengerveld De Kol, 2nd," gave more than 7,200 pounds of milk. Her owners, the Aldencrest Dairy Farm, Alden, N. Y., claim the world's improvement association record for a month's production. Can anyone beat it?



The Right Sort of a Well Curb. This is of concrete and stands well above the level of the ground, which prevents surface water from polluting the well water.



Easy to Load—Easy to Spread

YOU'VE heard, time and again, of the easy loading quality and the wonderfully light draft of the New Idea and Nisco Spreaders. Here is a photograph that gives you a picture of the way you can pile a peak load on the New Idea and Nisco—and literally “get away with it”. This man has heaped up a load until no more manure will stay on the Spreader. Yet two horses easily “got away” with the load—pulled it out of the barn-yard, up a short hill and out onto the field.

NISCO

The Original Wide Spreading Spreader

New Idea and Nisco Spreaders are built low so that they are extremely easy to load. No long shields in the way—no lever rods or chains. Nor does the rear wheel interfere with loading. And the light draft of this Spreader is a by-word among its owners. It is a fact—unquestioned, undisputed.

Why take a chance on buying an imitation when you can have the original New Idea or Nisco at a price as low or only slightly higher than inferior makes?

Write today for facts.

The New Idea Spreader Co.

“Spreader Specialists”

COLDWATER

OHIO

Twenty years of specialized effort in building manure spreaders have developed the New Idea and Nisco Spreaders to a point where these “Original Wide-Spreading Spreaders” stand—recognized leaders in the mind of the American farmer. *When you buy a New Idea or a Nisco, you buy the best.*

The New Idea Spreader Co.
Coldwater, Ohio

Gentlemen:

Please send me full particulars on New Idea and Nisco Spreaders.

Name

Address

.....

Sweet Potatoes Grow in North

Illinois Man Demonstrates That Famous Southern Crop Can be Successfully Produced

By ROBERT H. MOULTON

THE merits of the Georgia yam are so well known to the people of the South that no urging is needed to induce them to grow this delectable vegetable. In the more northern states, however, not many attempts have been made to raise yams, the general impression being that sweet potatoes do not thrive very well in the latitude of Illinois, for instance. Now comes L. J. Lively, of Glen Ellyn, Ill., a suburb of Chicago, with a remarkable exhibit of Georgia yams grown in his home garden which completely upsets the popular theory that the yam prospers only in Dixie land.

Mr. Lively while in Atlanta last winter became so interested in the subject of yam raising that he secured enough plants for an area of about 20 by 125 feet in his home garden last spring. Altho absent from home a good part of the summer, and unable to give constant attention to cultivating the plants, he achieved remarkable results as the accompanying photographs will testify. Forty bushels of yams was the yield from his garden plot, one hill alone yielding $7\frac{1}{2}$ pounds of the potatoes, the largest of which weighed $3\frac{1}{2}$ pounds.

On a recent trip thru Wisconsin, Nebraska and Kansas, Mr. Lively found farmers and home gardeners much interested in his experience, many of them announcing their intention of growing yams next year. In the opinion of Mr. Lively these growers should have even

better success than he did, since there is a great deal of sandy soil in the states mentioned which is particularly adapted to the yam while the climate



Some of the Sweet Potatoes Grown in Illinois.

is more suitable to its cultivation than is northern Illinois.

In recent years the sweet potato industry in the South has made remarkable strides, the number of bushels increasing steadily from 87,000,000 in 1917 to 112,000,000 bushels in 1921, according to figures of the Georgia State College of Agriculture. On account of unfavor-

able weather, the crop for 1922 is likely to fall several million bushels short of the 1921 yield.

The average production of Irish potatoes in the United States from 1915 to 1919 was 371,000,000 bushels. The production last year was 428,000,000 bushels. Deducting 15 per cent loss thru shrinkage and decay and allowing for seed stock, it is apparent that we consume nearly 300,000,000 bushels of Irish potatoes annually in this country. In other words, the consumption of white potatoes is three bushels per capita or six times that of sweet potatoes. This would seem to indicate that the sweet potato has great possibilities, and in view of the success of Mr. Lively in growing them in northern Illinois, as well as the fact that the sweet potato is declared by many authorities to be more wholesome and nutritious than the Irish potato, farmers may well consider setting out at least a small number of plants next year.



I Can Keep Sweet Potatoes

I AM able to keep sweet potatoes from one year until our next year's crop is ready for use, in the following manner: I have a box made of 1-inch lumber with a hinged top, made the right height to serve as a window seat. In the bottom of this box I place a layer of old carpet, then I pack the sweet potatoes, which have been previously wrapped individually in newspapers, into the box. On top of the potatoes I put several layers of old newspapers and close the lid. I covered my box with denim, padding the top with several layers of old blanket and keep it under my west kitchen window. It makes a nice place for the children to sit on cold winter days and watch the snowflakes fly.—MRS. JOHN S. GLASS, Bosworth, Mo.



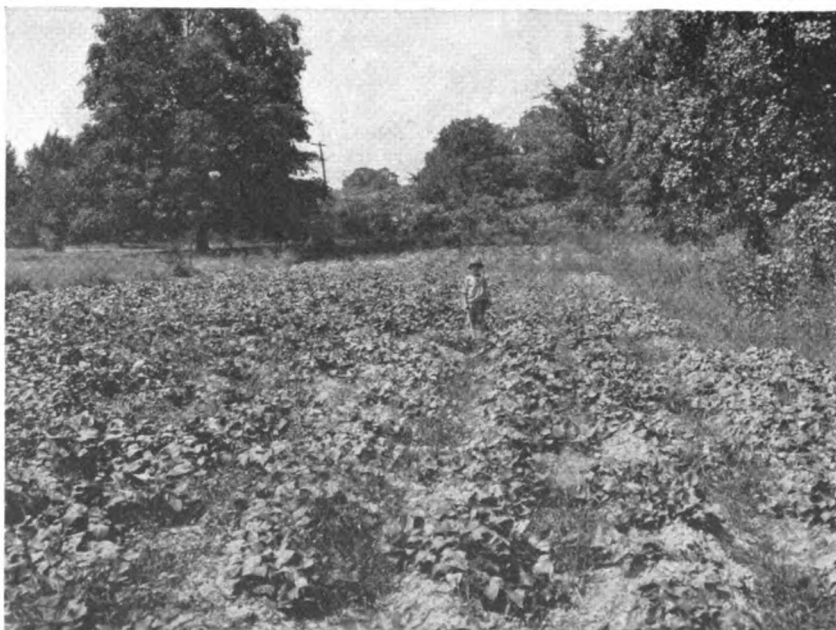
EVERY farm should have its own ice supply; and ice is a crop which can be harvested when other work is slack.



WHY lime the soil? Because it corrects soil acidity and enables clover, alfalfa, and other legumes to grow better.



IT'S mighty discouraging to grain weevils when the bins are kept clean, inspected frequently, and, if necessary, fumigated.



A View of the Sweet Potato Field of L. J. Lively, Which Produced 40 Bushels.



When To Do Your Thinking

Do your thinking about roofing *before* you buy it.

And buy the kind you can forget—you'll remember the name—once it's on your roof.

And when you buy, think first of toughness.

Toughness in some things is a vice.

In roofing it is a primary virtue.

Therefore, see not how much roofing you can buy for a dollar, *but* how much toughness.

And watch for the roll with the mule's head on it.

It's more than tough—it's toughest.

THE LEHON COMPANY

MANUFACTURERS

44th to 45th Street on Oakley Avenue
CHICAGO, ILL.

"NOT A KICK IN A MILLION FEET"

Litter Weighs 3,040 at 6 Months

Winner of Indiana Contest Gets Gold Medal and \$130 From
Get of Pure-bred Sow

WHAT can be accomplished with pure-bred hogs has been demonstrated by C. R. W. Schwartz, of Berne, Ind., the gold medal winner in the Hoosier Ton Litter Club of the Indiana Livestock Breeders' Association. In 180 days Mr. Schwartz brought a litter of pigs up to 3,040 pounds, winning in competition with 555 other Indiana farmers. The 11 pigs were sold at 9 cents per pound, bringing \$273.60. The cost of bringing them to maturity was \$143.33, leaving a net return for labor and investment in the sow of \$130.27.

The sire of the litter, Ton Defender 147049, is a registered Poland China boar. He is a pig from the first litter of a gilt. The boar was two years old when the dam was bred for this litter. The sow, Miss Pawnee 1st 269164, was farrowed April 2, 1918, being one week over four years old when the champion litter was farrowed.

When the sow was bred last fall, she was turned with the other nine sows of the Schwartz herd, in a field, a part of which was corn stalks in which soy beans had been planted, and the remainder of the field was an old clover meadow. They were kept here until March 1, with an old hulled clover stack as their shelter. They "roughed it."

She had no feed during this period except what she gleaned from the stalks, beans and clover meadow.

After March 1, she was fed three ears of corn daily and some skim milk. By April 11, the date of farrowing, she had consumed 115 pounds of corn and 340 pounds of milk. The corn was worth one cent per pound and the milk

was valued at 25 cents per cwt. The cost of corn and milk for the period amounted to \$1.15 and 85 cents, respectively, or a total of \$2.00.

The litter was farrowed in the open with only a straw roof for shelter, but the weather was mild enough for such housing to be adequate. The sow had the run of one-third acre lot of sweet clover, and the pigs were kept there thruout the entire feeding period. The sow consumed 30 ears of corn and eight gallons of milk daily during the entire 60-day suckling period, and Mr. Schwartz says that no scouring in the pigs was evident at any time.

The total feed consumed during the suckling period was:

1,000 pounds corn at 1c per pound.....	\$10.00
2,550 pounds milk at 25c per cwt.....	6.37
Total	\$16.37
Feed of sow during gestation period..	2.00
Service of boar.....	1.00

Total cost of litter weaning.....\$19.37

The pigs stood Mr. Schwartz at weaning time \$1.76 per head.

When the litter was six weeks old they were started on skim milk and shelled corn, and by the time they were sixty days old they were on full feed and entirely weaned. They were allowed all the corn they would eat from a self feeder all the time. For four weeks of the time the corn was soaked in water, but Mr. Schwartz says he will never soak corn for hogs again as it is useless work. The skim milk was diluted about one-half and they were given all they would drink of it twice daily.

During the fourth and fifth months, the corn and milk were supplemented with two hundred pounds of middlings and three hundred pounds of ground

wheat, both of which were mixed in the skim milk. Their forage consisted only of the one-third acre of sweet clover. The volume of feed consumed and cost of each follows:

Corn, 8,000 pounds, at 90c per cwt....	\$ 72.00
Milk, 16,150 pounds at 25c per cwt....	40.38
Wheat, 5 bushels at \$1.00 per bushel..	5.00
Middlings, 200 pounds at \$1.50 per cwt.	3.00
Feed for sow during suckling and gestation	18.37
Service of boar.....	1.00
Clover lot, rent and seeding (estimated)	8.53

Total cost of litter.....	\$143.33
The pigs were sold for pork and the 3,040 pounds at 9c per pound brought.	\$273.60
Cost of production.....	143.33

Net gain.....\$130.27

It may be better said that the \$130.27 was Mr. Schwartz's share for his labor and investment in the sow.

The cost of producing the litter on a pound basis was four and seven tenths cents (\$.047), which leaves him a margin of four and three tenths (\$.043), cents per pound.



FENCES and forage crops are two essentials without which no farmer should attempt to raise livestock.



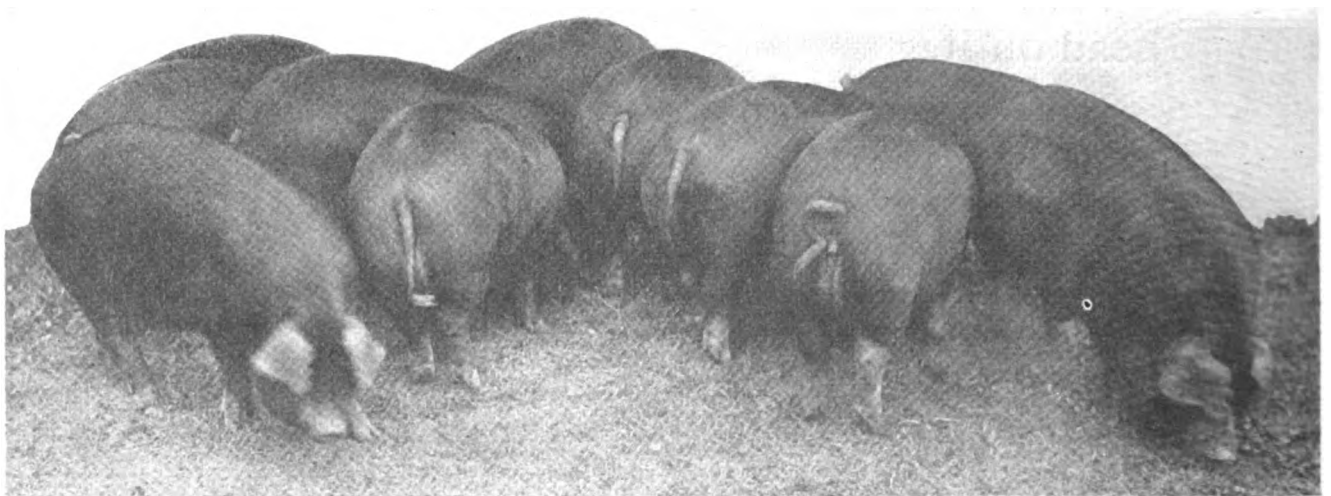
WHITELASH is one thing you can afford to spill—on the walls of the henhouse.



WHERE the hen is the machine, the egg the product, feed and labor the costs, it remains for management to be the economy.



FARM manure is a valuable fertilizer, but unless animals are valuable for their main products, it is doubtful economy to keep them for the manure alone.



The Winning Litter in the Indiana Contest. These eleven pigs weighed 3,040 pounds 180 days after their birth and were sold for \$273.60, showing a net profit over the cost of bringing them to maturity of \$130.70.



The Case Tractor-A Profit Producer

THE Case tractor has established a sure place for itself in the world of farming, by its profit-making capacity.

More Timely Work—Through the timely preparation of seed beds with dependable Case tractor power, crops come to maturity more safely, more surely, and with bigger yields. Timely harvesting and threshing, always possible with Case tractor power, add again to the farmer's profits.

Better Farming—By deeper plowing and more intensive working of the land, crops of better quality can be raised, bringing higher prices and therefore better profits.

Increased Farming Capacity—A big majority of Case tractor owners increase their producing acreage, either by farming more of their own land, or by the renting or purchase of more land. The tractor enables them to do this without employing more help, thus increasing profits.

Neighborhood Custom Work—Case owners often find time to help neighbors out with their plowing, harvesting, threshing, silo filling, and other work, thus adding considerably to their cash income. In many cases this extra work brings in enough cash to pay for the tractor in a few years.

Case tractors have many advantages as profit producers. They are dependable and durable because:

Ample power to handle loads is assured by a large power reserve that prevents overtaxing of the engine.

Because of its heavy construction and well balanced parts the engine stands up under continuous operation at full loads. Removable cylinder barrels and large, replaceable bearings add years to the life of the engine.

All working parts are fully enclosed, protected from dust and dirt, and are positively lubricated.

High grade roller and ball bearings are used. All bearings are easily replaceable and all working parts are accessible for adjustment or replacement.

These and many other advantages are fully explained in our new booklet "Better Farming with Better Tractors." Write for a copy today.

J. I. CASE THRESHING MACHINE COMPANY

(Established 1842)

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CASE
POWER FARMING
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NOTE: We want the public to know that our plows and harrows are NOT the Case plows and harrows made by the J. I. Case Plow Works Company.

New Heated Plow for Gumbo Soils

Exhaust from Tractor is Carried to Mouldboards, Heating Them and Causing Them to Scour in Heavy Soils

By G. F. FLEMING

USING the hot exhaust gases of a tractor to heat the plowshare and causing tight, sticky soil to shed as if it were sandy loam, a successful "hot" plow has made its appearance in Texas and gives indication of becoming a valuable and practical farm implement.

The plow is the invention of W. H. Ledbetter, who has given numerous field demonstrations under very trying conditions, all with success. There is no question about shedding even the tightest soil, once the mouldboard has become hot, which usually requires two or three minutes after the tractor engine is started. The hot gases, which are generated in the engine, are conducted thru a set of pipes, with flexible joints, into a jacket attached to the rear of the mouldboard and plowshare, heating these parts to a point when no soil can adhere regardless of what its condition may be.

The advantage of having a clean plowshare will appeal at once to farmers who have struggled with some of the tight, heavy soils which embrace large portions of the Central and Southern United States and which in many instances has caused farmers to abandon the mouldboard plow because of inability of horses or mules to pull clogged equipment. As result disc plows have displaced mouldboard plows in many places.

The "hot" plow in actual field test, lasting anywhere from eight to ten hours daily and witnessed by hundreds of

farmers in the black land region of Texas, has plowed to a uniform depth of seven or eight inches without putting undue strain on the tractor. A 9-18 tractor, equipped with three 14-inch mouldboard plows, turned the soil as if it were light sandy loam. The demonstrations took place on the tightest soils that could be found. The engine was run with the plows cold, at which time the soil stuck tightly and the machine could scarcely budge the load. Later the exhaust was allowed to enter the jackets on the mouldboards and at once the tractor moved off with the three plows at a speed which was measured to be two acres an hour. There was no straining because the heat separated the sticky soil from the mouldboards and shares. The heat, however, is not sufficient to injure the temper of the metal in the plows.

In 1879 A. W. Tucker, of Waxahachie, Texas, obtained a patent for a "hot stove" plow which attracted considerable attention. A small stove was attached to the mouldboard burning wood chips or corn cobs, but it kept the farmer busy finding enough fuel or carrying it with him in a sack and the first "hot" plow never became popular.

A steam heated plow came next, patented by G. W. Wright, of Cartersville, Mo. There was a small boiler between the plow handles from which steam found its way thru pipes to the mouldboard. This machine also proved a failure.

The third record of a "hot" plow was that patented by James B. Oliver, of Pittsburgh, Pa., which burned oil. In this, as in all previous types, the fuel had to be carried along and proved a hardship.

A new departure was the soil-shedding plow invented by Francis R. Bell, of Marshall, Texas, who made use of a wooden moldboard soaked in oil, which shed the soil as long as oil was applied. This was in 1878, but there was not enough oil then at a cheap enough price and the idea was abandoned.

Then came the "hog-skin" plow, used to a considerable extent in north Texas for several years but the farmers who remember its use say they had trouble keeping the hound dogs from eating the hog-skins and today it is but a faint memory among old residents.

A glass mouldboard plow came next. It gave fairly good results until the glass became roughened by wear when it no longer would shed the soil. Plaster of paris also was used on the plow share but with little success because of its softness.

In 1889 a patent for a perforated mouldboard plow was granted to J. W. Field, of Sherman, Texas. Water was carried in a tank fitted to the plow handles and it trickled thru openings in the share and caused the soil to shed. It required too much water, however, especially in a real Texas drouth when water is a scarce article, and this idea had to be discarded also.

Next came a perforated mouldboard plow which used oil instead of water. It was patented by W. E. Brown, of Philadelphia, and was followed by an invention by E. J. Etzler of Tyrone, Pa., which made use of air which was forced between the soil and the plowshare. Still another effort consisted of a set of chains which were intended to scrape the soil off the plowshare when in operation, as stated in a patent granted to W. H. Harrington of Cambridge, Mass., in the late '90s.

Since that time very little has been done to make a soil-shedding mouldboard plow until Mr. Ledbetter became interested in the subject. This plow sheds the soil and its operation entails no unnecessary expense because it uses a waste product in the form of exhaust gases from the tractor which pulls the plows.



Three-Bottom Plow, the Mouldboards of Which Are Heated by the Exhaust from the Tractor. The connection with the rear plow was broken to show how those heated scour, while the third one does not.

Rigid Rail Tracks Give Over 3,000-lbs. Draw-Bar Pull



THIS Fordson equipped with RIGID RAIL TRACKS was tested before the officials and the entire sales force of the Roderick Lean organization at Mansfield, Ohio.

These facts were found—the Fordson easily pulled a Roderick Lean Automatic Engine Disc Harrow of 40, 16-inch discs, the Harrow being 10 feet wide and the discs set at the maximum working angle.

Heretofore this feat alone has been impossible—but in this test the Harrow was loaded with scrap iron, making its total weight 2,400 lbs.

The dynamometer test registered over 3,000 lbs. Draw-bar pull.

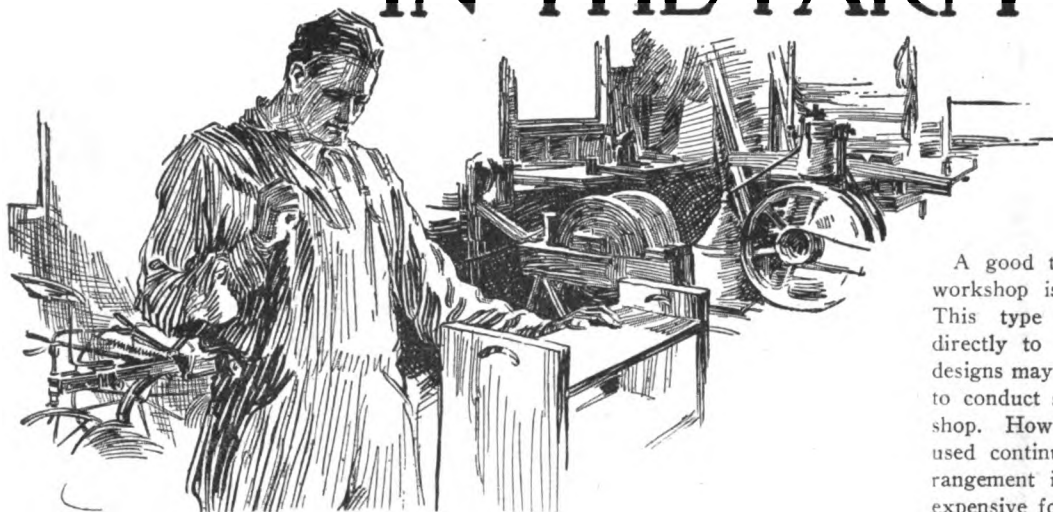
DEALERS

There is no disputing a fact—farmers realize they can get the most out of their Fordson only with the use of RIGID RAIL TRACKS and are demanding them wherever they are shown.

Wire or write to us today about this attachment that will make a crawler of any Fordson in ninety minutes,

The HADFIELD-PENFIELD Steel Co.
BUCYRUS OHIO

IN THE FARM SHOP



Equipment for the Farm Shop

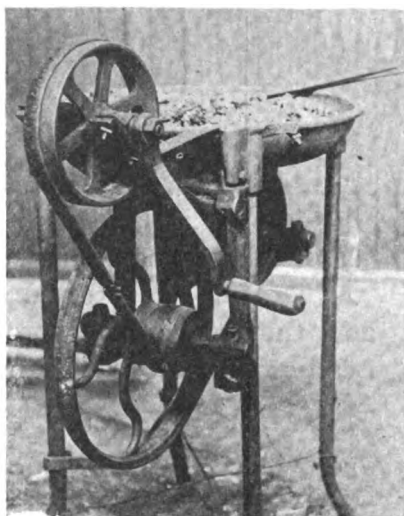
By LOWELL R. BUTCHER

THERE is some equipment and a few tools that are absolutely essential if the farm workshop is to turn out good work. The ones mentioned are the more important; others may be added as the shop expands.

An anvil, of course, will be found among the equipment. The body of this is made of cast iron, wrought iron or soft steel and the face or working surface covered with tool steel. The horn and the block next to the horn are of the same material as the body. The anvil is usually mounted on a block of wood, as is shown in the illustration.

The height that the anvil is placed will depend on the workman. A good rule is to mount the anvil so that the knuckles of the clinched hand will just reach the face when the workman stands erect. Facing the anvil, the horn should point to the workman's left hand.

The square hole in the right-hand end



Suitable Forge for a Small Farm Blacksmith Shop.

of the face is known as the hardie hole and is used to hold the stems of swages, hardies and blocks. The weight of the anvil should be 150 to 175 pounds.

A good type of forge for the farm workshop is shown in the illustration. This type has the blower attached directly to the forge. More elaborate designs may have a hood with an opening to conduct smoke and gases out of the shop. However, when the forge is not used continuously all day, such an arrangement is not necessary and a less expensive forge will do very well.

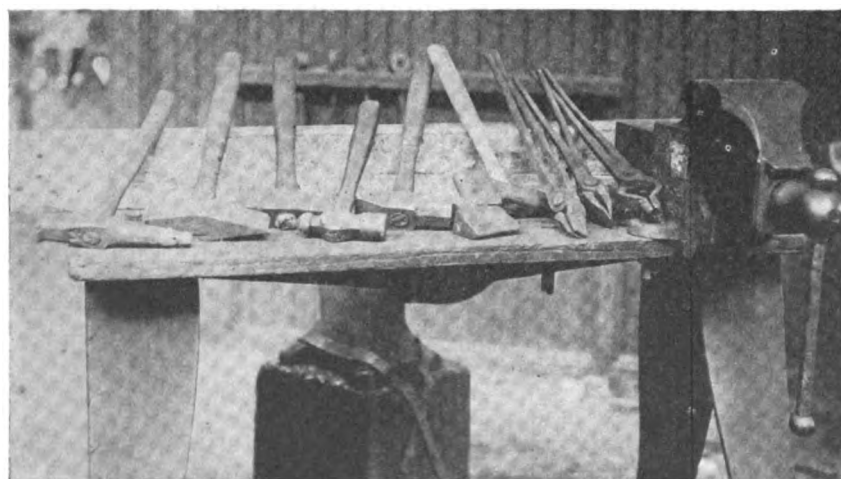
Three tools for cutting off stock are commonly used. These are the cold chisel, the hot chisel and the hardie. As the name would imply, the hot chisel is used for cutting heated material and the cold chisel used only for cold cuts. Both of these tools are usually mounted on handles. The cold chisel is made with a thicker blade than the hot chisel which has a rather thin cutting edge. Both chisels are tempered when new, but the hot chisel, from repeated use on hot material, soon becomes softened. For this reason, neither of the chisels should be used to do the work of the other.

The hardie is made with a cutting edge on its upper end and a stem that fits the hardie hole in the anvil. Stock is cut with this tool by placing it on the cutting edge of the tool and striking with a hammer or sledge. It may be used in place of either the hot or the cold chisel.

Various shapes of hammers are used, but the most common and convenient shape is the ball pein type. This hammer has a large end or face, used for ordinary work, and a ball on the other end. This rounded end is very convenient for scarfing and riveting. Hammers may be had in any desired weight from a few ounces to several pounds. A hammer weighing about twenty-four ounces or two pounds makes a good all-purpose size.

A light sledge is convenient when finishing a surface with a flatter off set hammer or when shaping heavy work with the assistance of a helper. Some of the lighter types are shaped the same as a ball pein hammer, but a double faced sledge weighing ten or twelve pounds will be the right size for the greatest variety of uses.

Tongs to handle the heated work must be had and after the workman has gained some proficiency he will be able to make an assortment that will provide the correct type and size for every kind of work. The three types illustrated are most com-



Some of the Small Tools Required in the Farm Shop. From left to right they are: Punch, cold chisel, set hammer, ball pein hammer, cross pein hammer, bottom fuller, top fuller, straight tongs, pickup tongs, and bolt tongs.

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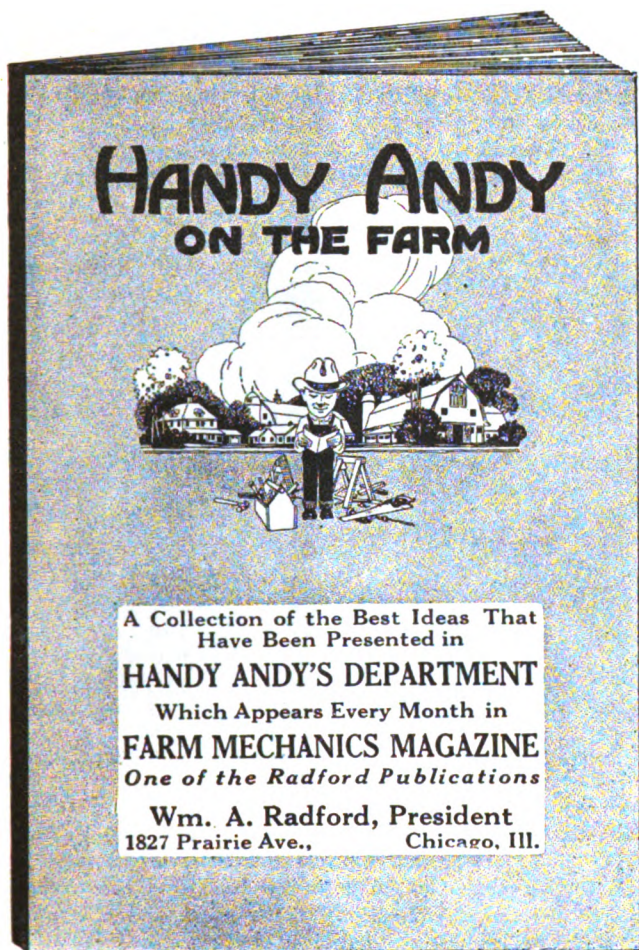
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Table of Contents—Handy Andy on the Farm

<p>Handy Andy in the Farm Shop. Shaft Hanger That Is Simple to Make. Force Feed Drill. To Drill a Hole in Iron. Disappearing Bench Stop. Vice Jaw Faces. Homemade Leather Punch. Cup for Bit. Repairs Gravity Oiler. Preventing Shop Drawer Spills. Tool Bag. Crag for Twine Ball. Mending Broken Strap. Mounting a Grindstone. Self-Adjusting Bench Clamp. Sandpaper Block. An Engine Protector. Measuring Box of Concrete. Use for Auto Tire Casing. House for Pump Engine.</p> <p>Handy Andy in the Farm Home. Hinged Stool for Kitchen Table. Combination Bread Cupboard and Cutting Board. A Hinge Broom Holder. Table Adjustable in Height. Oven for Oil Stove. Ironing Board Cover. Back-Saving Scrub Brush. Useful Pin Cushion. Clothes Line Holder. Shop or Home Desk. Rotating Foot Scraper. Buckles for Overshoes. Handy Andy File. To Tighten Clothes Lines. Novel Seed Corn Tester. Wool Tying Device. Convenient Combination Ladder. Seed Potato Cutter.</p> <p>Handy Andy in the Garage. Rig for Oil Barrels. Barrel Without Faucet. Tool for Changing Auto Tires. Tool for Fastening Tire Chains. Piston Ring Compressor. To Mount a Tire on a Demountable Rim. Extension Oil Can. To Jack Up Auto in Storage. After the Collision. Radiator Filler. Re-Using Dry Batteries. Swinging Door Fastener. Cinder Remover. Pull Out the Car. Holds Door Partially Open. Automatic Stop for Engine Pump. Small Swinging Door. Brake for Sled. Grease Cup for Wagon. Pipe Under Concrete.</p> <p>Handy Andy in the Barn. Barn Floor Scraper. Ladder to the Hay Carrier. Place for the Milk Sheet. To Hold Feed Pail. Liquid Manure Frame. Feed Box Easy to Dump. Medicine Funnel for Stock. Self-Regulating Ventilator. To Keep Milking Machine Clean. Grain Bag Holder. Handy Milk Stool for Strippers. Ventilating Barn Window. Hay Loft Tackle. Swinging Door Holder. Wire Line Holder. Cement Hitching Weight. Saves the Horses. Hoist or Derrick. Hog Slop Storage Tank.</p>	<p>Handy Andy in the Chicken House. Chicken Feed Bin. Electric Egg Tester. Dry-Mash Hopper. Protects Water Supply. Catch Chickens with Hook. A Good Trap Nest. Automatic Chicken Feeder. Chicken Grit Feeder. Poultry Fountain. Barrel Chicken Coop. Sanitary Water Fountain. Brood Coops for Hen and Chicks. Water for Poultry Yards. Hog Feed Trough. Corn Chopping Block. Handy Andy in the Field. Fence Wire Splicer. Barbed Wire Reel. Wire Fence Fastening. Handy Method of Marking Posts. For Pulling Fence Posts. Binding Slick. To Anchor Fence Corner. A Salt Box. Handy Band Cutter. Useful for Cutting Bands. To Keep Plow Out of Ground. A Good Salt Box. Adjustable Plowing Measure. Eliminates Joints of Roller. One-Man Crosscut Saw. Making the Best Ride Easy. Prevents Backaches. Corn Uncoverer. A Simple Scarecrow. To Move Heavy Tile. Handy Andy in the Yard. A Homemade Ladder. Concrete Cistern Cover. Handy Mail Box. Mail Box Signal. Making Spring Flow Clear. The Both-Way Gate. Pigeon Cote Weather Vane. Improved Seed Flat. An Adjustable Gate. A Simple Bird House. Garden Row Coverer. To Tether Cow. Support for Kettle. Saw Horse. Quick-Acting Latch. Recovers Pump Cylinders. Two-Way Gate Block. Gate That Lifts and Folds. Handy Andy About the Farm. The "Slip". Simple Corn Unloading Method. Stocks for Cattle. Catches and Holds Hogs. Easily Made Shoveling Stand. Easy Livestock Loading. Lightens Killing Work. Wagon Box Unloader. To Oil Cultivator Blades. End Gate Fastener. Brush Sled. Double-Blade Buck Saw. To Rescue Mired Animals. Gate-Closing Device. Hog House Door Covering. Tongue for Buckle. Easy Springs for Wheelbarrow. Modern Farm Building Designs. Dutch Colonial House. Square Hip-Boat House. Home for the Work Stock. Dairy Barn for 20 Cows. Where the Corn Crop Is Safe. Implement and Machinery Shed. Saw-Tooth Roof Hog House. A Good Colony Poultry House.</p>
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Also included in "Handy Andy on the Farm" are eight good farm building designs.

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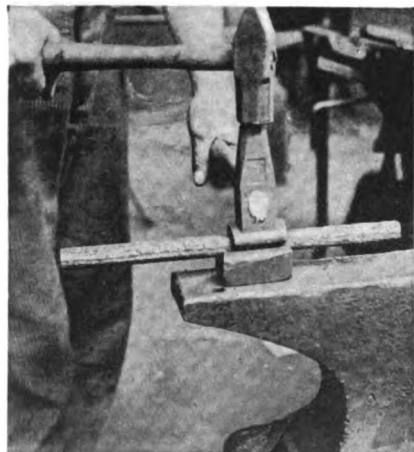
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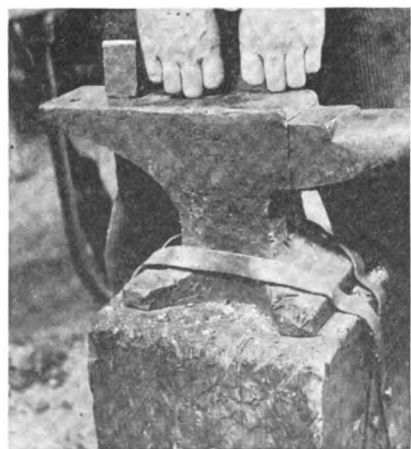


Using a Top and Bottom Swage to Finish Round Stock.

mon. The straight jaw tongs are used for holding flat or square pieces of work. If round stock is to be held, they are usually grooved or bent to the shape of the work. Bolt tongs, as their name implies, are useful in handling bolts or pieces which are larger at an end than thru the body. These are recessed so that the tongs do not touch the head of the work, yet get a firm grip on the body.

Pick-up tongs are not used to hold work while forging, but are useful in handling small pieces when hardening or tempering.

In using the straight jaw tongs it is important that the tongs fit the piece to be handled. If properly fitted, the jaws should grip the work thruout their entire length; that is, the jaws will touch the piece at every point. If not fitted, the tongs will have a very insecure grip, the work being held only at a point near the end of the jaws or at a point near the hinge. Fitting tongs to work is a very simple matter. The jaws should first be heated to a red-hot heat and the work to be held placed between them. A few blows with the hammer will close the jaws tightly against the work. Care



Showing the Proper Height for the Anvil and the Method of Fastening the Anvil to the Block.

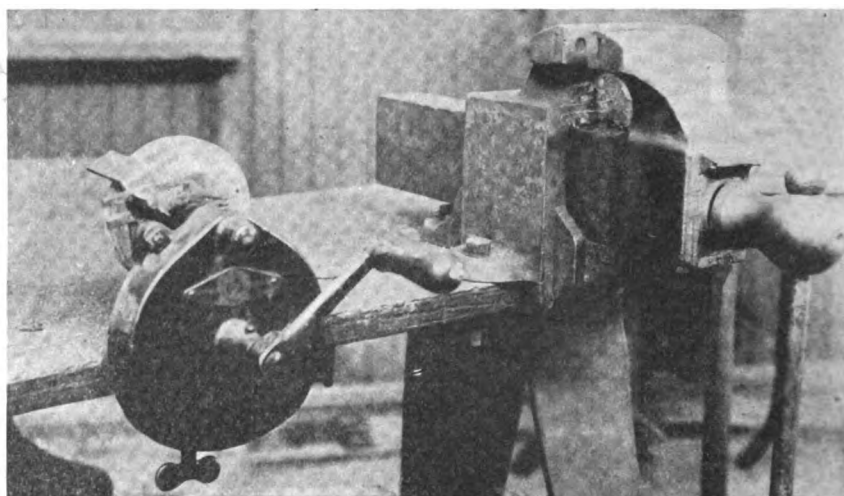
should be taken or the handles may be brought too close together during the fitting. This may be prevented by placing a short piece of stock between the handles just back of the eye. If the handles are too far apart, a few hammer blows just back of the hinge will close them to suit.

Two tools, the flatter and the set-hammer, are usually used to flatten and smooth work after the heavy forging has been done. Usually only one of these is absolutely necessary in the small workshop and if only one can be had, the set-hammer is probably the best choice. Both of these tools are mounted on handles and are used by holding the flat face against the work while the opposite end is struck with another hammer or sledge. The set-hammer and flatter are very similar in appearance and almost interchangeable in their uses. The flatter has a finishing face from 2 to 3 inches square

rounding working edge. For instance, a half inch fuller is one which has a working edge the diameter of which is one-half inch. They are used for rounding and filleting corners and for other purposes where this half-round shape is wanted.

The swage tools are very similar to the fullers except that their working faces have half-round grooves instead of rounding edges. These tools come in sizes according to the size of the groove in the working edge. That is, a half-inch swage is one in which the half-round groove is one-half inch in diameter. The swage tools are often used for finishing round pieces, the work being held between the tools and the "top" tool struck with a hammer or sledge. Shapes other than the half-round are sometimes used for other purposes.

Like the flatter and set-hammer, the "top" fuller or swage should never be



A Rugged Vise and a Small Grinder Should Be Included in the Farm Shop Equipment.

while the set-hammer is seldom over $1\frac{1}{4}$ inches.

As these tools are used for finishing and smoothing up a forge job, it follows that the faces should always be kept smooth with the edges slightly rounding. It is very poor practice to use the tool indiscriminately as a hammer; the face will become battered and the tool will be useless for finishing.

As the farm workshop expands and additional equipment is purchased, several forming tools will probably find their way among the equipment. Prominent among these will be fullers and swages. These tools are usually used in pairs, the pair consisting of a "top" and "bottom." The bottom tool has a square shank that fits in the hardie hole of the anvil and the "top" has a handle similar to that of a flatter or set-hammer.

The fuller tools have a working edge that is rounding in shape. They come in sizes according to the dimension of this

used as a hammer. Neither should "bottom" tools of this character be used in hardie holes so small that the tool is forced in. The stem of the tool should be a loose fit in the hole.

Some kind of a grinder or emery wheel is almost essential in any shop, no matter how small. If power is to be had, it should be run from that source. Usually a small bench grinder, such as is shown in the illustration, will serve to sharpen the cutting edges of tools and for other light work.

A heavy machinist's vise is also a necessity; some other tools may be omitted from the list, but few shops can get along without a heavy, serviceable vise. One with a jaw spread of eight to ten inches is about the right size, but, above all, it should be rugged.

If possible, some sort of drill press should be included. This will save punching holes which might be more neatly made by drilling. It may be used with

or without power; possibly it will be the type which fastens to a post or the wall. Steel drills, ranging in size from $\frac{1}{4}$ inch to $\frac{3}{4}$ inch by sixteenths will meet all ordinary needs.

Many other tools might be included, but those mentioned will fit the average need without great expense. Above all, the tools selected should be of good quality. They should be used for only the purposes for which they are intended. A good workman may turn out a passable piece of work with poor tools, but that same skill, applied with good tools, will produce work correspondingly better.



Build Better Crates

A GOOD livestock shipping crate needs to be light in weight, of proper size, constructed to protect the animal, and durable, declare the authorities at the Wisconsin College of Agriculture and the Forest Products laboratory in a recent free circular on "Better Shipping Crates for Livestock."

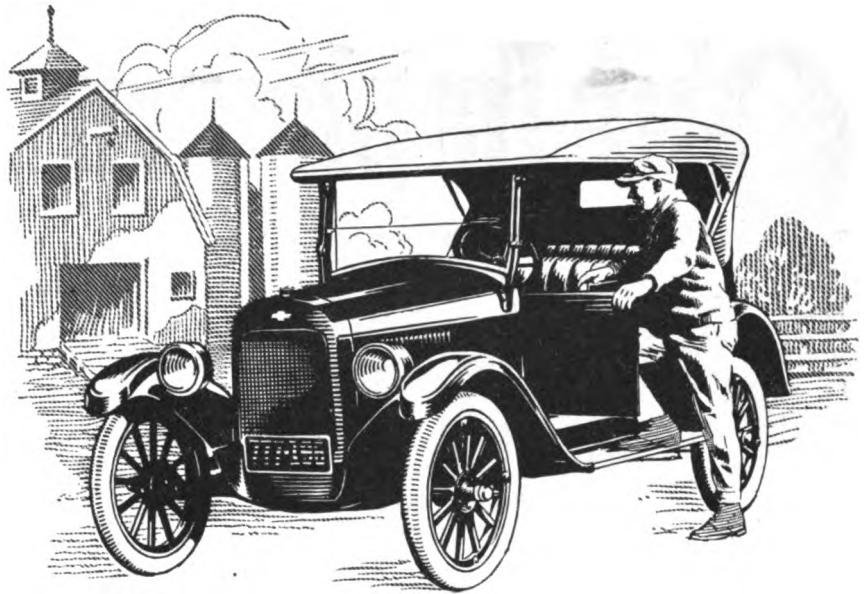
White pine is an excellent wood for crates assert the experts in Circular No. 153. In the same class with white pine are aspen or popple, basswood, cottonwood, cypress, chestnut, Jack pine, Norway pine, spruce, Western yellow pine and yellow poplar. Other woods may be used but are more difficult to nail and heavier to ship, point out the experts. The lumber recommended after a number of years of experimental work on shipping crates, is one inch thick and four inches wide.

The floor, one of the weak points in crate construction, has been especially studied. To avoid weakness the experts suggest that the floor be laid crosswise upon the skids. Skids 2x2 are suggested for ordinary crates, and 2x4 inch for cow crates.

No matter what kind of a crate you are building, the fundamental methods are essentially the same, say the authors. A few hours' work will complete a crate which will last for a long time, even with hard usage. Seven steps in crate building are suggested: (1) Build the floor first; (2) build each side separately; (3) nail the sides onto the floor by nailing the uprights to the skids; (4) cut the top and end slats; (5) nail the top and end bars, spacing them properly; (6) build the end gate; (7) put in the stanchion. This last step is only necessary when shipping cattle.



SOMEONE has said that the frost is God's plough which he drives thru every inch of ground, opening each clod and pulverizing the whole.



Why Farmers are Turning to



for Economical Transportation

In 1922 Chevrolet jumped from seventh to second place in sales of all cars, and to first place in sales of fully equipped modern cars.

Purchases by farmers were the chief factor in this remarkable development.

Farmers are shrewd buyers and study costs and values carefully.

They want automobiles not only of low first price, but also of low later cost for operation and maintenance.

They want room, comfort and the ability to stand up under hard conditions.

They find that Chevrolet, fully equipped as sold is the best value per dollar in the low-priced field, and neighbors tell them it costs less per mile to operate.

They find it roomy, easy to handle and reliable. They like its finish and its long stream lines.

That is why the farmer demand for Chevrolets is daily increasing its lead among modern, quality automobiles.

Prices F. O. B. Flint, Michigan

SUPERIOR Two Passenger Roadster	\$510
SUPERIOR Five Passenger Touring	525
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Chevrolet Motor Company, Detroit, Michigan

Division of General Motors Corporation

There are now more than 10,000 Chevrolet dealers and service stations throughout the world

Applications will be considered from high grade dealers in territory not adequately covered

Our Implement Inspector

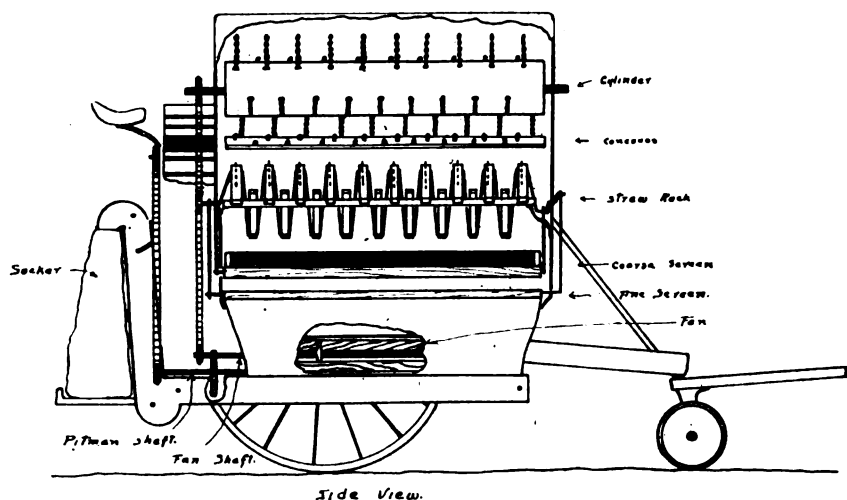
HE finds much new and worth-while farm equipment offered to increase efficiency and cut down labor.

EDITOR'S NOTE: Farm Mechanics does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address Farm Mechanics Information Exchange, 1827 Prairie Ave., Chicago.

Crawler Traction for the Fordson

A NEW development for the Fordson tractor is a steel crawler drive which can be put on in the field in about an hour's time without drilling a single hole or altering the tractor in any way. This tread, dynamometer tests have shown, increases the drawbar pull of the Fordson from 25 to 30 per cent, which makes the tractor that much more efficient in soft or sandy soil.

The crawlers are 8 inches wide and have grousers $1\frac{1}{2}$ inches high, made integral with the shoes which are open hearth steel. The shoes are connected with a hardened steel pin which works in a hardened steel bushing. On the outside of the bushing is a hardened steel roller which takes the pull of the drive sprockets and eliminates friction and wear. The sprockets are of alloy steel with openings between the teeth which permit the dirt to fall thru. These sprockets are mounted directly on the rear axle shaft. The front idler crawler wheels are carried on roller bearings, entirely inclosed from the dust. The tension of the crawlers is taken



Side View of Pea and Bean Thresher.

up by coil springs which are adjustable. To get the same pressure of the front end of the crawlers as on the rear, a semi-elliptical spring is attached to the front crawler frames and the under part of the tractor. This spring is pivoted in the center which permits the crawlers to oscillate entirely indepen-

dently of each other and at the same time get an equal pressure at all points.

The tractor is fitted with two crawler turning devices, each having an independent foot lever so that either crawler can be slowed down or stopped entirely for short turning, with the result that an inside turning circle of two feet is obtained.

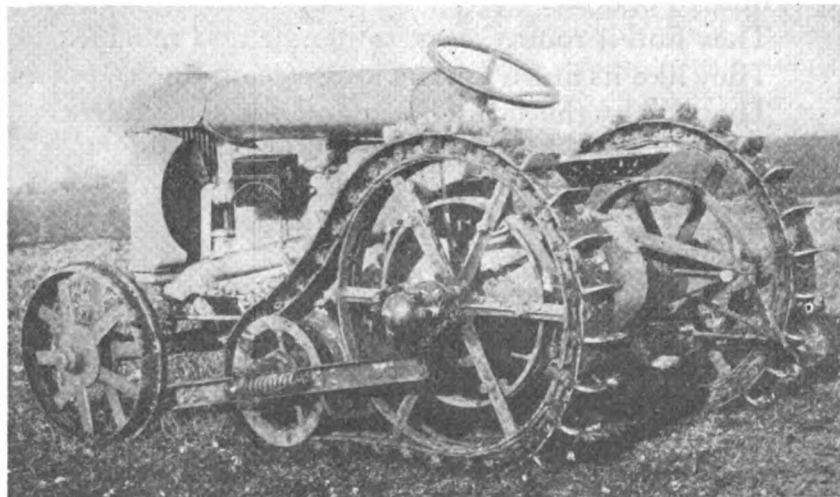
This makes possible very short turns when working on soft ground in and around orchard trees.



Threshing Attachment for Grain Binder

J. C. WOOLEY, professor of agricultural engineering, and C. A. Helm of the field crops department of the College of Agriculture, University of Missouri, have produced a pea and soy bean thresher which may be attached to a grain binder.

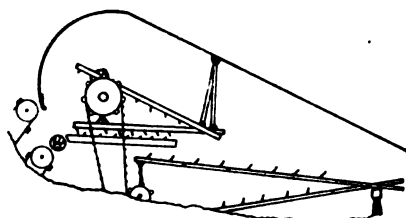
To install this machine, several drawings of which are shown, it is simply necessary to remove the head of the binder and put the new attachment in its place. The sickles, reels and con-



Fordson Tractor Equipped with Steel Crawler Drive.

caves are used the same as for cutting grain. This part of the equipment delivers the beans to the threshing cylinders. The attachment of this machine in no way impairs the use of the binder as a grain binder during the following season.

The ordinary cylinders and concaves first tried with the thresher could not be used as not sufficient amount of power developed to drive the cylinder. The cylinder teeth were then replaced with chains to give a flail action to break the pods. Two rows of sloping concaves, with a platform, are set at a 30-degree angle and hold the straw until



Beaters in the Thresher.

the threshing is completed by the chains.

A beater may take the place of the cylinders. Paddles are then fastened to the crank is to give it a bearing and dragging action at the same time. One row of light concaves is placed between each pair of beaters. The beaters are equipped with a row of hooks to drag the materials thru and keep from clogging the machine. The cylinder equipment proves more effective in that work can be done with the same expenditure of power.

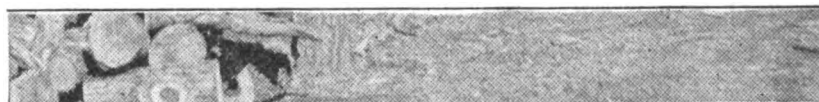
Tests have proven that the cylinder with chains breaks about 95 per cent of the pods when the beans were allowed to stand until thoroly ripe. The pods not broken were found to contain immature beans or beans not up to standard.

The pods coming thru the machine have only been broken open but are still fastened to the straw in most cases. The straw is delivered from the cylinder into the straw shaker or straw rack, where the beans are screened out and fall onto the chaffer below. Under it there is a screen of finer mesh. A fan is placed below the screen and adjusted to send an air blast up and outward thru the screen, completing the cleaning.

The beans are finally collected into a drag elevator which delivers them to the sacker which is fastened onto the rear frame of the binder. The machine is driven until the sack is full. The operator can then tie the sack, dump it off and install a new one. If he finds it desirable the bundle carrier can be



IT WILL NEVER FAIL YOU



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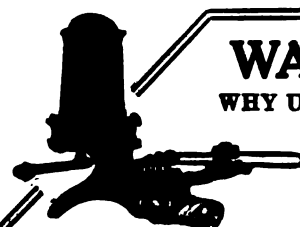
"My Goodyear Klingtite Belt has yet to fail me in wood cutting. I have worked it two years in snow and rain, and it has neither shrunk nor stiffened."

—Matt Lahr, Eden Valley, Minnesota.

IF you want an all-weather belt, one that holds the pulleys in a slipless grip, needs no breaking-in, and is ready for work every day you need it, get the Goodyear Klingtite Belt. It runs trouble-free, delivers full power, and wears a long, long time. Made in endless type for heavy duty and in cut lengths for the lighter drives. Sold by all Goodyear Mechanical Goods Service Station Dealers and by many hardware dealers.

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GOODYEAR



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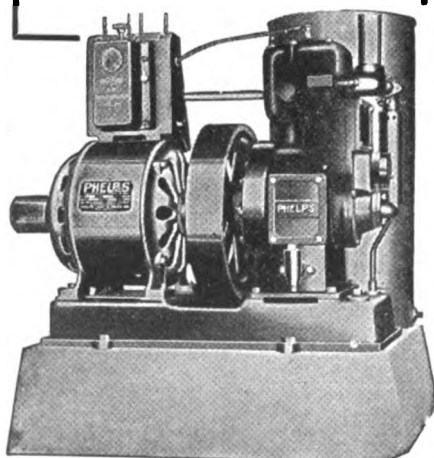
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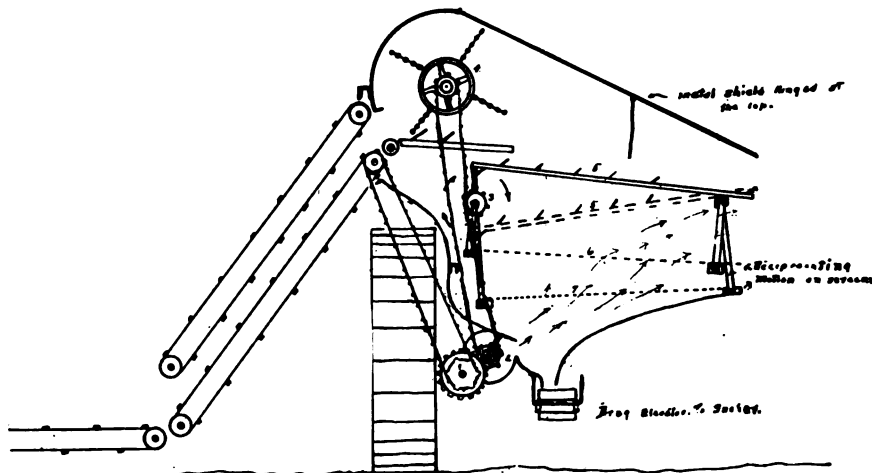
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WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS



Front View.

Front View of the Pea and Bean Thresher.

modified to collect the straw and deposit it in windrows, so it can be handled easily when used for hay.

Power to drive the threshing cylinder comes from the pitman shaft and a spur gear placed on the shaft meshing with a smaller gear on the fan shaft. The cylinder shaft is connected with the fan shaft by means of a chain and sprockets. The sprockets can be in different sizes to give the proper speed to the cylinder. The straw rack is operated by a sprocket acting the same as a belt tightener for the cylinder chain. This gives the straw shaker the opposite rotation from the cylinder which is necessary to deliver the straw from the machine.

The drag elevator and sacker will receive their power from the fan shaft thru a bevel gear. The cylinder is set ahead about 12 inches further on the binder than the regular head in order that the bulk of the straw may be delivered to the middle of the machine.

One man is able to harvest his entire crop of soy beans, thresh and sack them ready for delivery to his bin or elevator by using one of these pea and bean threshers. It puts the straw in windrows in good shape to be handled as hay. The machine has a sufficient capacity to enable him to harvest his crop in a very short time.



Few Apple Trees Escape San Jose Scale Damages

SAN JOSE scale, one of the bad fruit tree pests, is just as serious, if not worse, in apple orchards at the present time as it has ever been, according to A. J. Olney, a member of the horticultural department of the Kentucky College of Agriculture. Few of the thousands of apple orchards in that state are free of the insect. The scale attacks the trunks, limbs, twigs and fruit and often cuts the yield of apples heavily

before farmers notice it. Spraying with lime sulphur at this time of the year when the leaves are off the trees is the best way to control the pest.

The scale goes thru the winter as a partly grown insect that matures in the spring. The number of insects increases rapidly thruout the summer. If the tree has become crusted with the scale, it is necessary to spray once at this time of the year and again in early spring. Light attacks of the scale may be controlled with one spray put on at this season. However, it is almost impossible to get rid of the scale entirely with the result that spraying every year is necessary.

Several years ago the lime sulphur solution often was prepared right on the farm but the home cooked wash now has been generally replaced with the commercial forms. No material has proved better than the liquid lime sulphur for controlling the scale. In making the commercial liquid lime sulphur weak enough to use in spraying apple trees for the scale, one part of it should be added to eight parts of water. When made to this strength, the diluted solution should test between four and five degrees Baume by the hydrometer test. The standard commercial liquid should test 30 degrees Baume.

Bright, sunny days when there is little wind blowing are the best ones on which to spray since it is important to cover every part of the tree with the spray and have it dry before rain comes. Standard commercially prepared scale-cides sometimes give as good results in controlling the scale as the lime sulphur. Where the scale has become very bad, it may be advisable to use miscible oils in controlling it.



SENDING plant disease and insects to a fiery grave is a good way to insure clean culture in the back yard garden next spring.

Fertilizing for Hay

GROWING hay need not injure the fertility of the soil if proper methods are followed. If conditions have been made favorable for clover thru the addition of sufficient lime and phosphorus, the timothy field may be maintained for one year without further fertilization.

In some cases, however, it seems desirable to keep the land to timothy for more than a year. It should then be top-dressed with manure each fall or winter. Six to eight loads to the acre have usually been found adequate, providing 25 pounds of acid phosphate are mixed with each load of manure. An alternative procedure is to topdress in the early spring at the rate of 200 pounds or more to each acre with a mixture of equal parts of nitrate of soda and acid phosphate.

This method of utilizing fertilizers in rotation has been found to result in a much larger than average yield of timothy; while at the same time there is no lessened yield of the other crops grown in rotation.



Whitewash

WHITewash is the cheapest of all paints, and for certain purposes it is the best. Lime, which is the basis of whitewash, makes a very sanitary coating, and is probably to be preferred for cellars and the interior of stables and other outbuildings. The following directions for making whitewash are taken from Farmers Bulletin 474, "The Use of Paint on the Farm."

Ordinary whitewash:—This is made by slaking about 10 pounds of quicklime with 2 gallons of water.

The lime is placed in a pail and the water poured over it, after which the pail is covered with an old piece of carpet or cloth and allowed to stand for about an hour. With an insufficient amount of water, the lime is "scorched" and not all converted into hydrate; on the other hand, too much water retards the slaking by lowering the heat.

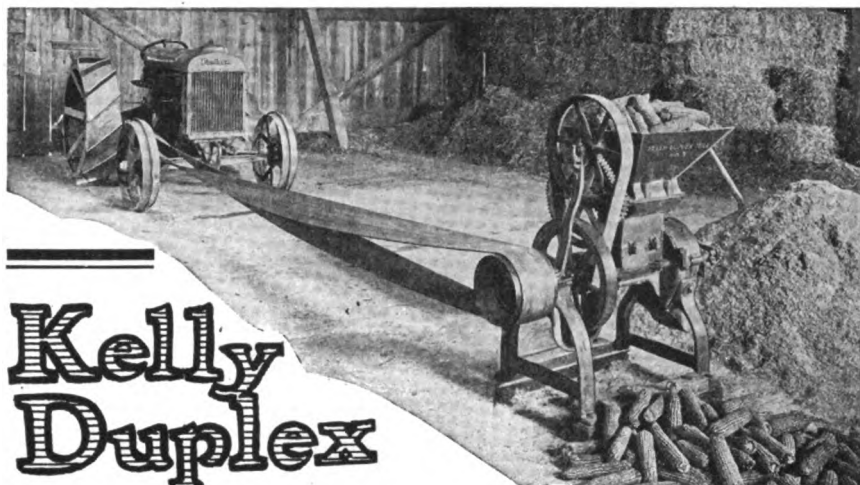
"Scorched" lime is generally lumpy and transparent, hence the use of the proper amount of water for slaking and an after addition of water to bring it to a brush consistency.



A FULL cord of well-seasoned wood gives about as much heat as a ton of coal.



WHAT doth it profit a child of it have clean clothes every day, and mother never finds time to read aloud or tell stories in that precious hour before bedtime?



Kelly Duplex

HIGH GRADE COMBINATION CUTTER AND GRINDING MILL is constructed with the original KELLY double grinding surface that speeds up grinding. Does twice the work with less power.

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Built in all sizes and types.

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The KELLY is the most practical grinder for use with the Fordson. There is still some valuable territory open to live representatives.

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Now Within
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THERE are no clockwork parts to get out of order, no repairs are ever necessary and re-painting is unheard of with these wonderfully accurate reproductions of standard Fords. Never before

have such remarkable examples of workmanship been available at so reasonable a price. Each model is carried out in surprisingly fine detail that gives added satisfaction to the proud little owners.



Size over all, 6½ in. Wheelbase, 5 in. Weight, 2 lbs.

Dealers True, these are only miniature toys when compared with their big brothers, the regular Fords. But what a splendid advertising medium to interest your prospects this spring, Mr. Ford Dealer. Every child who has one is going to be a booster for the big car. Don't delay placing your orders.

Arcade Manufacturing Co.
Freeport, Illinois



Our Readers Are Requested to Make Free Use of this Department for Questions and Answers on Modern Farming and Farm Improvements

Roller Bearings

Editor FARM MECHANICS:

While picking corn last fall with a picker I had quite a little trouble with the roller bearings, which I soon learned how to repair. Bearings have been worn a lot and the little rods which hold the retainer together have become worn and will let the retainer come apart. Then the rollers are apt to pile up and cause a broken bearing and lots of time lost.

This can be avoided by overhauling the bearing and re-riveting the little rods which hold the retainers together. If you find one or more of these rods spoiled or gone, they may be replaced with a wire of the same size.—WALTER J. VANDERMARK, Everly, Iowa.

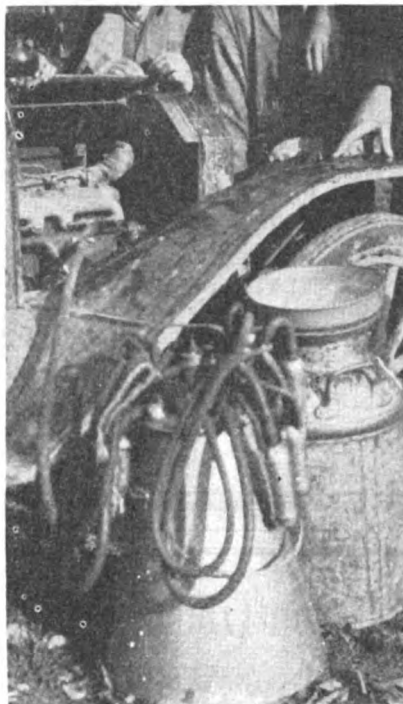


Ford Operates Milker

Editor FARM MECHANICS:

Please find enclosed two pictures illustrating one way of milking a cow.

The pictures were taken on J. J. Lodrach's farm near Birmingham, Ohio. Mr. Lodrach lost his eyesight four years ago and has continued to work in spite of his handicap. He has the agency for a milking machine and uses this means of demonstrating it. Harry Buchs, one of the boys in my Farm Engineer-



The Air Pipe of the Milking Machine Is Attached to the Manifold.

ing class, drove him around last summer and acted as his guide.

The pictures I took down on the flats of the Vermilion River, where the cows

were in the pasture. The boys in the picture belong to my Farm Engineering class and are on a field trip to study milking machine operation. One of the illustrations shows how the pipe of the milking machine is attached to the manifold of the engine.—RICHARD W. JEFFERY, Vocational Agriculture Dept., Birmingham-Florence (Ohio), Joint High School.



Honest Words of Praise

Editor FARM MECHANICS:

Being one of your charter members and having been a regular subscriber, I think FARM MECHANICS is one of the very best all-around papers for the farm.

A special space is being reserved in the reading room of my class in agriculture for FARM MECHANICS, and I am sure my class of 25 boys will take a great deal of interest in it.

With best wishes for your continued success, I am
G. C. GRAZIER,
Instructor of Agriculture, Agricultural High School, Ewing, Ia.



Many Counties Employ Extension Agents

OVER 2,100 of the 2,850 agricultural counties in the United States employ at least one agricultural-extension worker, who acts as a joint representative of the United States Department of Agriculture and the State agricultural college in conducting demonstrations of farm and home practices found most successful by experiments of these institutions. They also give advice and assistance in farming matters by personal visits, correspondence, telephone messages, community meetings, and articles in the local press.



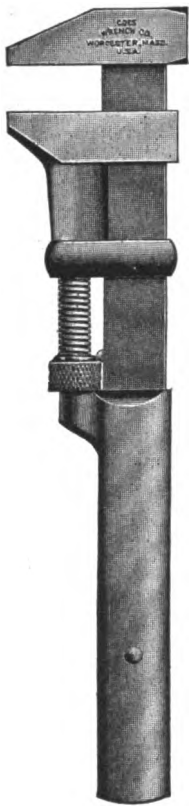
The Vitamine Eaters

SOME of these folks that have been carrying around little cakes of compressed vitamins and munching them now and then as a sort of duty to their constitutions, will get dreadfully jarred when they read Bulletin 240 of the Com-



Farm Engineering Class at Birmingham-Florence (Ohio) High School Watching Milking Machine Operated by Ford Car.

COES WRENCHES



On the modern farm where everything is being done by machinery, you will find that Coes Wrenches are helping to keep each and every machine in first class running order.

Coes Wrenches are built to give better service and last longer than any other wrench on the market.

*For sale by all good
dealers*

Coes Wrench Company

Worcester Massachusetts

necticut Agricultural Experiment Station—if they read it.

Bulletin 240 will probably be even a greater blow to some of the manufacturers of vitamine pills and cakes and powders, etc., some of which have been the subject of beautifully designed full-page advertisements in some of our very best magazines. The bulletin is a little technical and contains a lot of charts and graphs but it doesn't require more than average intelligence to get the main facts from it—which are that a lot of people are getting badly fooled in this matter of vitamins.



New Use for Wheel Hoe

SOME years ago my father found himself without a wheelbarrow. Wanting to get some potatoes delivered from the patch to shelter, he wondered how he could save himself the heavy burden



Wheel Hoe Turned Into a Wheelbarrow.

of shouldering the sack of spuds. Nearby stood a wheel hoe and instantly "Daddy" hit upon an idea. He upturned the wheel hoe and behold, it served his purpose just as well as a wheelbarrow.

Here is a snapshot of my aged father whose ingenuity may help some other farmer when in a similar predicament.—NINA C. WIEKER, Wooster, Ohio.

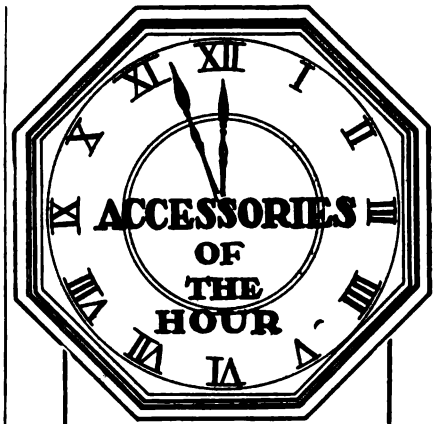


EVER bake ham and apples together?

Rub the ham well with brown sugar, core the apples, fill cavities with raisins, arrange around ham, add a cup or two of water and bake until the ham is soft. Johnny says it's "great stuff." So does Dad.



BLACKING the kitchen stove while her hands are still covered with bread dough is the way one woman keeps her finger nails from getting stained. Another rubs soap in under the nails before she starts this dirty job.



*To Show Them Is To
Sell Them*

U & J Timers

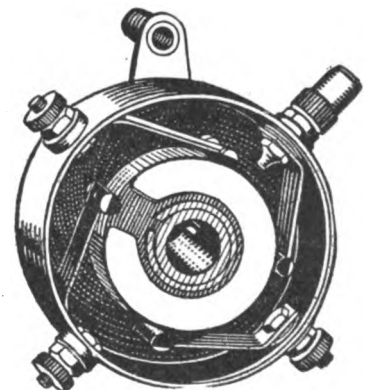
*for FORD CARS
TRUCKS & TRACTORS*

THE U & J Ford "Rotor" Timer insures perfect ignition every mile of its life. This "rotor" principle gives a wipe contact of steel on steel that insures the hottest spark.

The wonderful U & J Accelerator with Adjustable Foot Rest and Guide is in a class by itself. The only accelerator adaptable for all Ford motors.

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Helps for the Housewife

MECHANICS in the HOME



Time-Savers for the Sewing Room

By
MRS. DORIS W. McCARY

FOR the home seamstress there are certain conveniences which make sewing easier and quicker. If one has these labor-savers, she will find that the weekly mending is done more quickly, leaving more time for sewing.

When I had no sewing machine, I dreaded mending day. Now I finish it in a hurry, and have time and enthusiasm for making new things. A sewing machine is a necessity nowadays, and no woman should be without one. I bought one of the small portable electric machines. I can put a table on the porch, and sew where it is shady and cool. A motor may be bought for less than twenty dollars, and attached to the old machine. It enables one to sew twice as fast as usual, or slowly if desired.

It is worth while to learn to use the attachments, since after their operation is mastered, one can save much time. The hemmers are used most often. I even hemmed a sheet the other day, using the wide hemmer, and had an even smooth hem finished in the time it would have taken to do the basting. The tucker, quilter, ruffler and pleater all give good results in less time. I have made a number of garments, including

aprons and children's clothing, using the binder. Practical buttonholes are made by binding a strip of material on both sides, cutting into pieces, and putting these together to form buttonholes, binding, and at the same time fastening to the garment. If you have never used the binder, you have a pleasure in store. It is easy to learn to use, following the direction book. I made over a spring coat into a winter dress, which required considerable piecing. This was covered up by braiding in self-color, using the underbraider. I had an elaborate and effective trimming. There is no danger of the braid pulling loose, as when sewed by hand, since it is securely stitched. A rather large continuous pattern is easiest to follow. A woman who does not learn to use the attachments is missing half of the joy of owning a machine. Be sure to give the machine care, occasional cleaning and oiling, and learn all about how to adjust the tension and stitch.

Next to the sewing machine in importance is a good work table. It may be a home-made one, of convenient height for standing and sitting, and four feet long by three feet wide, with a drop leaf to use when cutting long garments. The table may be fitted with castors and drawers. It should be comfortable for work when sitting by it, and basting. Basting is best done with the garment flat on the table, rather

than on the lap. An unfinished wooden top is best since thumb tacks may be used to keep patterns flat and in place when tracing, and a tracing wheel may be used without marring the finish of the table.

An old dresser or cretonne-covered shirtwaist box may be fitted with drawers or boxes, partitioned off into suitable places for scissors, tape, chalk, pins, pencils and unfinished garments.

A long mirror is convenient for use when fitting, tho one of medium size may be set on the floor when one wants to see skirt lengths.

If a rough table is used for cutting, it may also serve as an ironing board, if a sleeve board is provided. Otherwise the ironing board is needed, since pressing is so necessary to obtain tailored effect, and it may often take the place of basting certain seams and tucks. An ironing board that folds up into the wall cabinet is handy in the sewing room.

A dress form is a remarkable convenience, and enables one to make elaborate, splendidly fitted dresses, without any assistance. The forms can be made from gummed paper and are worth the time it takes. Hundreds of farm women have been making them this year, and find that they are great labor savers.

Patterns may be kept in an orderly fashion in a box of the right size, with heavy cards separating the groups of patterns, the cards being labeled in the manner of a card file. Or they may be kept in different pockets on the closet door. Only a few patterns are needed. It is better to use the one which you know fits, altering it to fit the new design. I often copy dresses from mail order catalogs or store windows.

If one has a separate sewing room, it is easy to sew a few minutes when the opportunity comes, then go away and shut the door, later coming back to pick up the unfinished work. But if there is no separate room, it is necessary to be more systematic. I have to sew in my dining room at present, which is not desirable. Thus I plan to get out my material, start a thing, and if possible, finish it. I plan to start one thing at a time and finish it. Sometimes it is



The Sewing Room Should Have Plenty of Light, Preferably at the Left of the Seamstress.

more convenient to cut several garments, baste all of them, and have them all ready to stitch at one time. More can actually be accomplished in a whole day, than in several fractions, since it takes a certain length of time to get things together ready to start, yet much can be done in the odd moments in a day.

For real efficiency in sewing, one should have the best tools and know how to use them to get maximum results. Sewing is a science as well as an art, and requires good equipment.



Vegetables for Children

VEGETABLES form a very essential part of a child's diet because they furnish to the body minerals, vitamins and cellulose, say the food specialists of the University of Nebraska Agricultural College. The vitamins and minerals necessary to produce growth, the cellulose to prevent constipation. Peas, spinach, beans, baked potatoes, carrots, stewed celery, tomatoes, lettuce, squash, asparagus, cauliflower, cabbage and all kinds of pot greens may be included in a child's diet. Most of these vegetables may be canned so that they may be used twice a day the year around. If this practice is followed a child should be willing to eat any of the ten different vegetables whenever presented to him. The prejudice which children often have against certain vegetables can be overcome by the following: First—Give small amounts, until accustomed to the flavor. Young children should have strained vegetables and a good way to serve them is in cream soups. Add just enough vegetable to flavor the soup when it is first given, then gradually increase the amount as the child becomes accustomed to the flavor.

Second—Combine vegetables with other foods. Most children like the flavor of meat, so vegetables may be combined with meat in a variety of ways. Some children can learn to eat vegetables in salads, which offer many attractive combinations.

Third—Serve vegetables attractively.



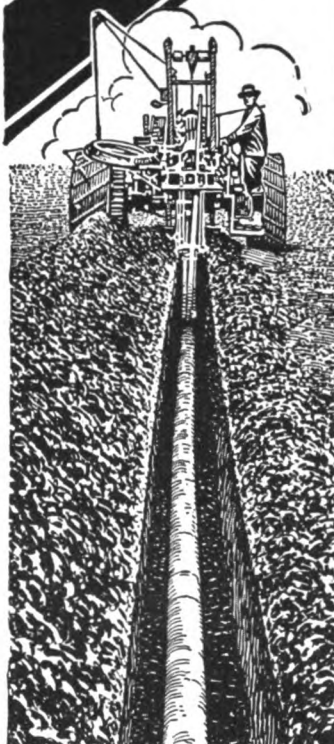
BRIGHT touches in curtains, flower pots, etc., and especially light walls, will make the kitchen into a cheerful place in which to spend an eight-hour work day.



WE all scorch food occasionally, but we don't all know the best remedy when the mischief has been done. Remove the container from the fire at once and place in a pan of cold water. Then remove the food, being careful not to scrape out the burned particles. In many cases there will be no scorch taste.

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Keep Him On the Farm!



WE HAVE started hundreds of men—farmers and farmers' sons --in the big-money business of ditching. No end to the work to be had. No real limit to the profits!

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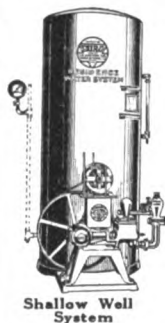
Write us today. Tell us the soil conditions in your vicinity and average depth of ditching. We will then send you a free copy of our big book, "Dollars in Ditches." And our service engineers will tell you the exact size ditcher you need. They will show you how to get started *right*--show you how others make big money--and how you can make it too.

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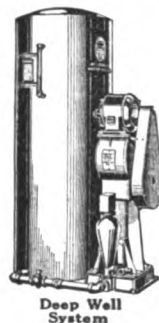
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The Shaler 5-Minute Vulcanizer is easy to use—you need only a match. Always ready—never bothered by wind or storm. Cannot injure or burn the tube. No gasoline—no danger of fire. Get a Shaler 5-Minute Vulcanizer from your dealer. It will soon pay for itself by the saving in time, trouble and tire repair bills.

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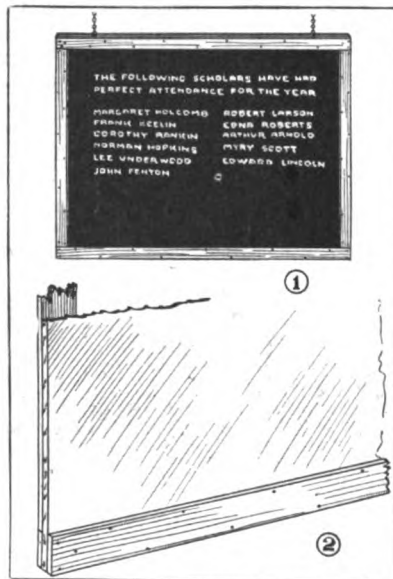


WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

A Blackboard, a Bulletin Board and a Wall-Rack

THE blackboard in Figure 1 measures 36 by 48 inches, but the size is something for you to decide on yourself. The writing surface is wallboard, and this material can be purchased in 32-inch and 48-inch widths, in varying lengths from 6 to 10 feet.

The easiest way to make the blackboard frame is to tack lattice-strips or laths



to the edges on both sides (Figure 2). Laths are cheaper and you can plane them up satisfactorily.

The frame strips can be mitered at the corners, but neatly made butt joints like those shown in Figure 1 will look just as well and will be easier and quicker to make. Glue the strips to the wallboard, and in addition nail them with $\frac{5}{8}$ -inch or $\frac{3}{4}$ -inch brads.

When the wallboard has been framed, give it two coats of black paint, then two coats of liquid-slating. Paint or enamel the frame strips.

Figure 3 shows a blackboard easel that is easy to make. Use 1-by-2s for strips A, B and D. Figure 4 gives dimensions for the A-shaped frame. Bring together the upper ends of uprights A, as shown, and fasten them with the block C (Figure 5); connect the lower ends with the crossbar B. Fasten block C and crossbar B to the back of the uprights. Cut strut D 6 inches shorter than strips A, and hinge it to the block C (Figure 5). Fasten a loop of chain to uprights A, and the center of the loop to strut D, to keep the easel from spreading when set up.

Figure 6 shows how to make the adjustable shelf of a strip of 1-by-2 with a strip of lattice-strip nailed to its edge to form a ledge. Cut a pair of pegs (G, Figure 7) to support the shelf, and bore holes in the uprights to stick them into.

Alloy Steel on the Farm

CHAPTER XI

Alloy Steel is made by adding a very small percentage of such alloy metals as nickel, chrome, vanadium, manganese or molybdenum to high-class carbon steel. These alloys are introduced into the steel while it is in the molten state. They give the steel great toughness, strength and ability to sustain shocks.

Alloy Steel is not as expensive as many people think. Proof of this is the low price at which Ford cars, trucks and tractors and their repair parts are sold.

While the steel itself costs more, the lighter weight for a given duty saves part of this cost; in freight to the factory from the steelworks, and in freight to the consumer on the finished product.

If makers of farm machinery used alloy steel in such parts as gears, pinions, steering-knuckles, cam-shafts, drive-shafts, springs and other vital working parts of their machines, the farmers' repair bills and their expenses, due to breakdowns, would be greatly reduced.

The lighter weight would also mean a saving in power—horse or gasoline—every hour the machines were in use.

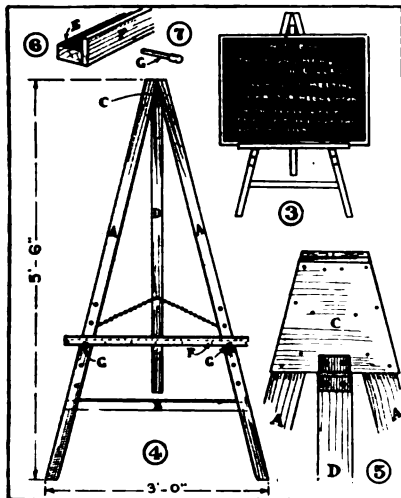
Our long experience in supplying steel to implement-makers will enable us to co-operate intelligently with makers of farm machinery, in supplying exactly the right grades and analyses of Interstate Alloy Steel for the parts that must stand the severest punishment.

The automobile industries have demonstrated the importance and the ultimate economy of alloy steel; and their experience, as recorded by the Society of Automotive Engineers, and by our own technical staff, is at the disposal of all steel users who will communicate with us.

Interstate Iron & Steel Co.
104 South Michigan Avenue
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WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

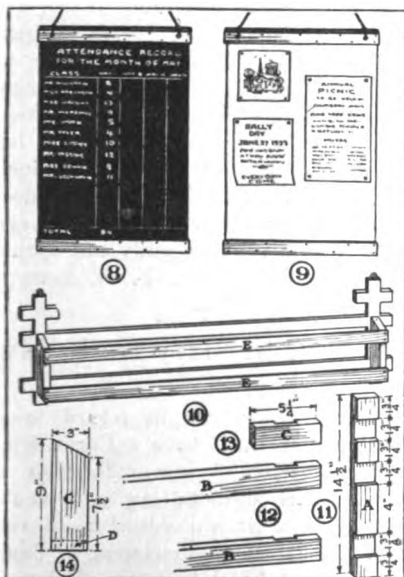
The bulletin board shown in Figures 8 and 9 may be slated on one side for a blackboard and left plain on the other side, for the posting of notices. It will



only be necessary to frame the wall-board across the top and bottom, as shown.

The wall-rack shown in Figure 10 is not as elaborate to make as you might suppose. The back is made of 1-by-2s. There are a pair of uprights (A, Figure 11), notched to receive two horizontal connecting bars (B, Figure 12), and a short crosspiece (C, Figure 13). The three horizontal pieces are also notched, so when they are set in the notches of uprights A the surfaces will be flush. The rack is made of two end pieces of the size of C (Figure 14), a bottom strip of the width of the end pieces and of the correct length to fit between them (D, Figure 14), and two face strips (E, Figure 10). After assembling the rack, and applying stain or paint, drive screweyes into uprights A for hangers or wall hooks.

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Paul Water Systems Make Winter Work Easier

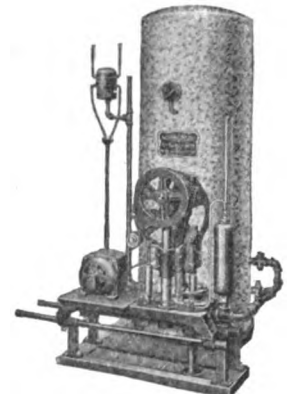
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Send for booklet "Paul Water Systems" and information.

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This Paul System delivers 150 to 250 gallons per hour from deep well. Send for free book, prices and installation data.

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The Universal Tractor Wheel



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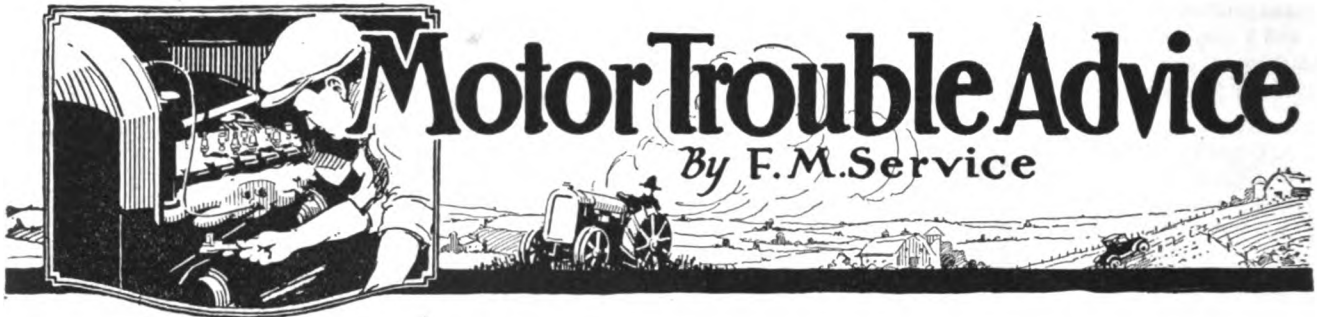
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ONE AGENT HAS SOLD 96 SETS
WE WANT MORE LIKE HIM

THE GRID IRON GRIP WHEEL CO.
TOLEDO, OHIO





Ford Needs Overhauling

To the Expert:

I take much interest in reading Motor Trouble Service, but have not seen quite my trouble answered, so will ask for some help. I have a 1919 Ford (touring) and sometimes have a great deal of trouble getting it started. After priming and giving several quarter turns, it will often give one or two puffs then quit, and is very hard to get it to hit any more, either by priming or not priming, and it will seldom start without spinning the motor real fast. I clean and oil the timer every few days. And when the motor does start, the spark must be far advanced and the motor makes a great deal of noise. After running a few miles it does not make so much noise, but the more spark the more noise when idling, tho it runs well and pulls well when warmed up. Had new oversize rings put in last spring and it has good compression. When the motor is cold I have to chunk the wheels or set brakes very tight to keep it from running forward, and if very cold it is so stiff I have to jack up a wheel before I can spin it at all. The high has not been tightened for more than 8,000 miles.

Also have very poor lights. The right light does fairly well, but the left one does not make enough light to show on the road ahead at all. Have had new plugs put in lights but no better. The same bulbs are in the car that came in it, never did burn one out.

I have driven it about 20,000 miles. Do you think the magneto needs setting up closer? Do you think it needs over size pistons to stop the noise? The connecting rods have been tightened this summer and seem to be all right. Do you think the main bearings are loose? The valves have been ground twice this summer and the magneto plug cleaned every few weeks.—O. H. JOHNSON, Exline, Iowa.

Answer—A motor that has gone 20,000 miles is bound to have loosened up and worn considerably, and we would recommend that you have the motor taken down and rebored, fitted with new pistons and rings, new valves, main bearings and connecting rods fitted up, and any parts in the transmission that appear to

Mr. Service will answer free of charge for Farm Mechanics readers questions of general interest on Automotive troubles. As a "trouble shooter" he is probably the best equipped man in the industry, having diagnosed the ailments of thousands of automobiles, trucks and tractors. Put your troubles up to F. M. Service—Editor.

have much wear taken out and replaced with new. The magnets should be tested out and if they will not attract and hold their own weight they should be replaced with new. The field coil should be tested for shorts and replaced if any are found.

In reassembling the flywheel and field coil, be sure that the magnets are not more or less than one-thirty-second of an inch from the field coil armatures. If all the above work is done you should have a motor that would be practically as good as new.

Regarding the car being hard to start when cold, due to it being stiff and having a tendency to creep, is not due to the clutch adjustment, but to the adjustment of the screw on the lever that rides the cam on the emergency lever shaft when it is pulled back. To correct this, loosen up the lock nut and screw the stud down six or seven complete turns. This will cause the clutch to be further thrown out when the emergency lever is pulled back.—F. M. SERVICE.



Cylinders Out of Round

To the Expert:

I am a constant reader of your paper and certainly wished I could receive it oftener than once a month. I would like to have a little information on some troubles of my Ford Truck.

I am desirous of knowing how I can remedy on my Ford Truck (model T-1921) the oil leaks from both rear wheels, coming from the differential. This truck had new felt washers put in by supposedly one of our best garage men. Right after the installation the left wheel leaked, and now both are as bad as ever. Kindly let me know what washers to insert or other remedies you would advise.

I also have another trouble on which

I would like your assistance. By the same garage I had new pistons and rings installed at the same time. Now the Ford smokes worse and uses a good deal more oil than it did before I took it to have it fixed. The first cylinder carbons up quickly and fouls the plug in one or two days. Before taking it to the garage the first cylinder did not pump oil, but the other three did, but now the first does while the others do very little. When the first cylinder is on top center it is solid, but in bottom it has a slight wiggle. When removing piston from cylinder the mechanic found the pistons loose, and could not insert oversize pistons.—F. J. FORD, Eatontown, N. J.

Answer—There are several patent devices that the makers claim to stop grease leaking from the rear wheels of a Ford car, but probably the best results can be obtained by drilling a ¼-inch hole in the bottom of each rear axle housing, just inside of where the outer casting holding the roller bearing and brake shoe is riveted to the housing tubing. This will drain off the excessive grease that leaves the differential before it can enter the outer roller bearing and rear hub. Practically all other makes of cars use this method to overcome this grease leaking.

The cylinders of your motor must be slightly out of round, and your mechanics should measure the cylinders at all points with a micrometer gauge, and if they are found to be more than .004 of an inch out of round it will be necessary to rebore or regrind them and have new pistons and rings fitted. If the variation is less than .004 he should be able to lap in a new piston .002 to .005 of an inch bigger than the piston now in the motor. This lapping will correct the slight egg shape to the cylinder walls and should make a perfect motor.—F. M. SERVICE.



Fordson in Sixty Inch Saw

To the Expert:

I am writing you in regard to a Fordson tractor. I have a Curtis friction drive No. 2 saw mill, with a 60-inch inserted tooth saw and would like to know if a Fordson could run such a mill to any satisfaction. I don't expect to make a business of sawing any more than to saw lumber for my

own purposes such as to rebuild the place. I have no Fordson, never owned one. Some tell me a Fordson would no more than run the mill, but I see in some issues of FARM MECHANICS where a Fordson operates a sawmill and I would like to know by having a flywheel on the mangle or saw shaft if it would not give pretty good satisfaction. Of course it depends largely on the size and length of logs a person would expect to saw, I suppose. This would be mostly cottonwood logs, say 16 or 18 feet in length and about 20 to 30 inches thru.

If you think a Fordson could handle it, about what size pulley should I use on the saw shaft and how heavy a flywheel should I also use? If I needed power only for the sawmill I would get a steam engine, but I have so many other jobs to do just suitable for a Fordson, I hate to invest in anything bigger if I could make a Fordson do.—JOSEPH TURGEON, Platte, S. Dak.

Answer—We have no record of a Fordson ever operating a saw mill with as large a saw as a 60-inch, tho it will and is operating 36-inch saw mills thruout the country every day. We would suggest that you get in touch with your nearest Fordson dealer who would be glad to send out a tractor and hook it up to your mill, if you gave him to understand that you would purchase it if it performed satisfactorily.

If it is found that the Fordson does not develop enough power at the belt to pull a 60-inch saw, it would be far more economical for you to discard the present saw and install a 36- or 40-inch one, as the cost of the saw would be way under the difference you would have to pay for a Fordson when compared with a steam engine, which would only be of use for the saw mill.

To try out the Fordson with a 60-inch saw, we would recommend an 18-inch pulley on the saw shaft, and for a 36-inch saw a 12-inch pulley.—F. M. SERVICE.



Knock is Baffling

To the Expert:

I have an Overland Model No. 4 car that had a very bad knock but then I had driven the car 38,000 miles and of course it had a very bad piston slap which I said was the cause of the knock.

I now have had the block reground with new pistons, new rings, and new wrist pins and had one new rod bearing, also new main bearing installed. Put in a new set of timing gears and gave the motor a complete overhauling such as grinding the valves, etc.

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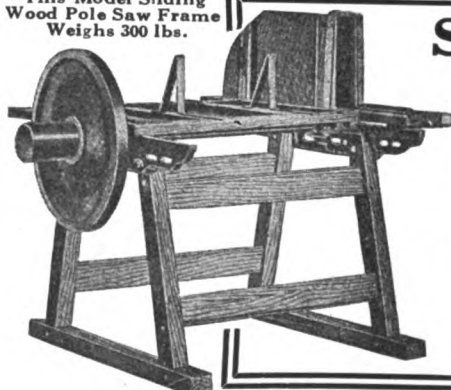
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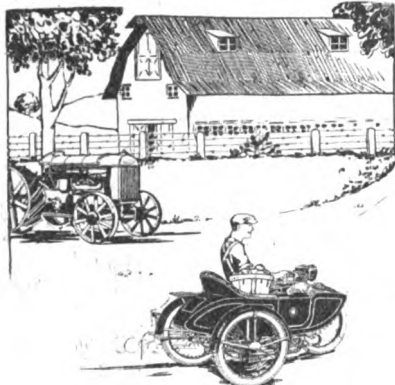
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HENDEE MANUFACTURING COMPANY
Largest Motorcycle Manufacturer in the World
SPRINGFIELD MASSACHUSETTS

After all of the above work with an outlay of \$75 I still have the knock, which is very noticeable when going down hill or when idling at a fast rate, that is, when speeding the engine up.

Engine does not miss but throttles down good and has good power. Have had the crank case off since doing the work and have tightened up the connecting rod bearings, also examined the main bearings but found no noticeable play on them. The engine does run minus the knock for a short time after tightening up the rods but in the course of a half hour's running it gradually returns.

After assembling the engine after it was reground I drove about 100 miles before I noticed any knock at all and then it was very faint at first and gradually got worse until now it's very annoying indeed. On a hard pull it is hardly noticeable but soon as the engine catches up then there is that loud dull thump at times and other times it is rather dull-sounding.

This condition has baffled the best mechanics in town and none of them have been able to tell me the cause or its reason for such.

Any light you may throw upon the subject that will help me to overcome this bad condition will certainly be appreciated.—WILLIAM ACKER, Warwick, N. Y.

Answer—You have apparently one or two things wrong with your motor.

1. A bent connecting rod or sprung crankshaft. Whenever a motor is overhauled the crankshaft should be placed between centers and tested with a dial indicator; if it is more than .005 of an inch out of line at any bearing the shaft should be straightened or replaced with a new one. The connecting rods should always be tested whenever removed to see if the wrist pin end is in perfect alignment with the bearing end of the rod or if the rod is twisted.

2. A connecting rod throw on the crankshaft may have an egg-shaped bearing surface which would cause a connecting rod to loosen up in a very short time after it is taken up. The way to find if this is the case is to remove the connecting rods from the crankshaft and test the circumference of each of the bearings of it with a micrometer. They should not vary in being a perfect circle more than .002 of an inch. If one or more are found to be out of round the shaft can be removed and the bearings reground to a perfect fit. Either of the above things would cause trouble in exactly the way you describe yours, so we would advise that you check up the above in your motor.—F. M. SERVICE.

THE AUTO-OILED AERMOTOR

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Oil an Aermotor once a year and it is always oiled. Every moving part is completely and fully oiled. A constant stream of oil flows on every bearing. The shafts run in oil. The double gears run in oil in a tightly enclosed gear case. Friction and wear are practically eliminated.

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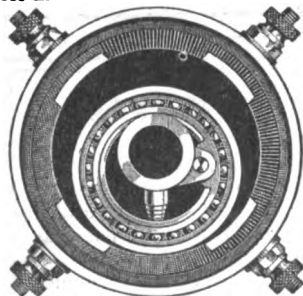
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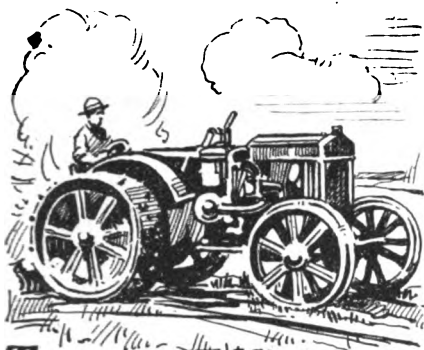
Makes your own gas. It is cheaper than coal or wood. Reduces women's work more than one-half in cooking, supplying hot water, ironing, etc. Safe, requires fuel but once a season, lasts a lifetime. As cheap and as efficient as city gas. No dust, no dirt, no ashes, no wood, no coal, and no carrying or lifting. Just light the gas. You are losing money every day you try to get along without it. Write for FREE Catalog.



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The same "film" prevents oil from working up into your cylinder heads to form carbon and keeps "unburnt" gas and kerosene from seeping down into the crank case to weaken lubrication. No-Leak-O gives perfect oil control and compression in each individual ring. Every genuine No-Leak-O Piston Ring has the word "No-Leak-O" stamped in the ring.

Jobbers and Dealers: Write to-day for literature and liberal dealer proposition. Let us tell you how our National Advertising brings you business.

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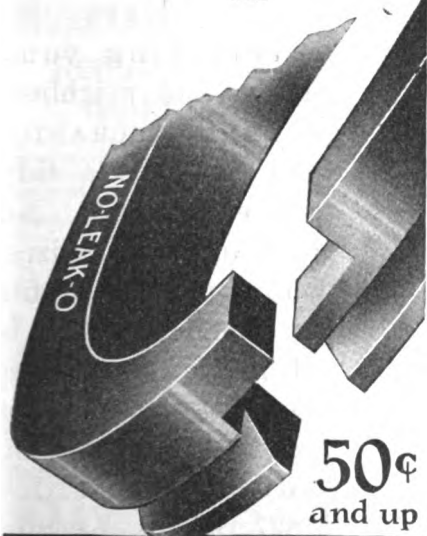
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NO-LEAK-O
PISTON RINGS

Avery Pumps Oil

To the Expert:

I have a 12-25 Avery tractor that works oil in the front cylinder. I have done everything I know of to do to stop it, but without much success. I have put in a new sleeve piston and rings that worked all right for a while and then it pumped oil again.

Would plugging the holes that are drilled in the piston stop the trouble? There are two sets of 3/16-inch holes drilled in the piston.—W. E. SARGENT, Sergeant Bluffs, Iowa.

Answer—Plugging the holes in the piston would do no good as they are put there to help drain off the excess oil in the cylinder. We would advise you to measure the cylinder wall and be sure it is perfectly round. If it is found to be slightly egg shape, you had better have it reground and a new piston fitted with new rings. However, if it is not out of round you should lap in an oversize piston.

This is done by taking a piston that will just start in the cylinder, but will not go all the way thru and work it back and forth while turning it around, using ordinary valve grinding compound mixed thin with oil on it. This will grind away the irregularities in the cylinder wall and when the piston has been lapped until it will pass thru the cylinder, you will have a perfect fit. Now install a good grade of leak-proof piston rings and your troubles should be over.—F. M. SERVICE.



Oakland Misses on High

To the Expert:

Kindly advise what can be the trouble with my Model 34 Oakland. It runs all right on the lower speeds but misses very badly on high speed, say from 20 to 25 miles an hour.

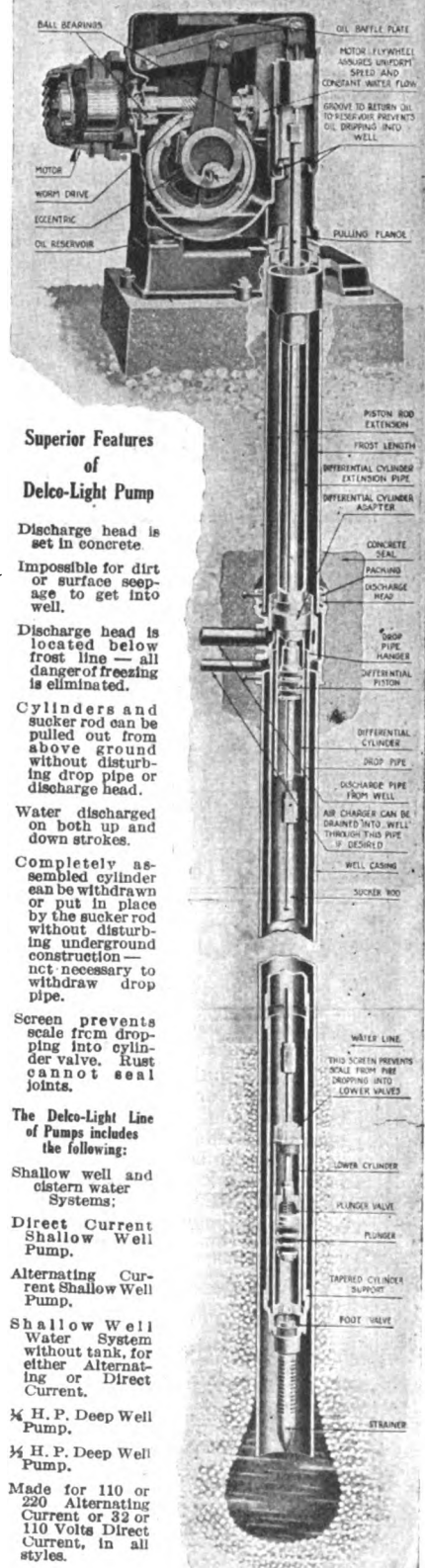
I don't think it is in the carburetor, and pulling the choker will not help it any. It seems to me the ammeter jumps from 0 to 18 amperes and vice versa when going at a high speed.

Also what causes a 1918 model Oakland to miss at a low speed and run good at a higher speed. I also think it is in the ignition.—Geo. WOELFEL, New Holstein, Wis.

Answer—The trouble with your Oakland missing at high speeds is due to either the valves or ignition. Overhead valves of the type used on the Oakland are apt to stick in the guide at high speeds if not cleaned and ground occasionally. We would recommend that you remove the cylinder head and grind these in carefully, at the same time polishing the stems with emery paper. In adjusting the tappets be sure there is

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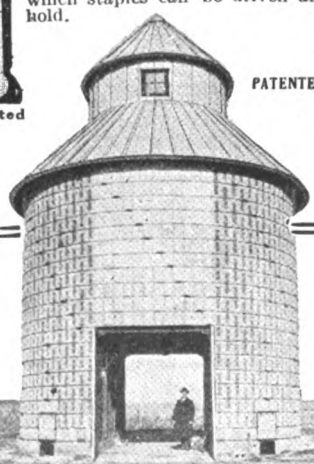
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at least .008 of an inch clearance between the valve and rocker arm.

If the trouble is not eliminated after the valves have been ground and adjusted, go over the entire ignition system and inspect the following things: spark plugs, be sure the points are set just 1/32 of an inch apart, and that there are no breaks or tiny cracks in the porcelains. Distribution points. See that they are not corroded or burnt black on their surfaces, that they make and break evenly and do not break more than 1/32 of an inch. Wiring. Check this over for loose connections or worn insulation that would jar loose or short under the vibration of high speed. The fact that the ammeter jumps back and forth is due to the uneven running of the motor and has no bearing on the cause of it missing.

The distance of a gap of the spark plugs being more or less than 1/32 of an inch would cause your Overland to run as you describe, as also would the magneto breaker points being burned or out of adjustment.—F. M. SERVICE.



Non-freezing Fluids

To the Expert:

I would like to have some reliable information on non-freezing mixtures for automobile motors. Is kerosene a reliable fluid to use in the radiator during the severe winter weather? Will it freeze, heat up, or injure the motor?

A bee keeper told me that extracted honey had been found to give good results and would not freeze under ordinary conditions. Could you inform me definitely on this point?—F. G. LODGE, Flemington, N. J.

Answer—Kerosene is a good anti-freezing medium when used in a motor that has pump circulation but cannot be used in automobiles having thermo syphon circulation, as the kerosene will not syphon and the result is a badly overheated motor and the solder melted out of the top radiator tank. Kerosene will not freeze or thicken up about 20 degrees below zero, and the only damage it will do in a season is to eat out the hose connections and throw off an objectionable odor.

Using honey as a cooling solution has never been brought to the writer's attention before, but we do not see how honey would circulate as it becomes very congealed in cold weather.

There is only one real mixture to use after all is said, and that will meet all requirements, and can be used under any conditions. That is a solution of alcohol and water, the proportions of which at the different temperatures are given below.

Twenty per cent alcohol, 80% water

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This is the time of year you use a lot of wood for fuel or lumber to build or repair sheds, poultry houses, stalls, bins and other necessities on the farm. Let the

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Our One-Hole and Two-Hole shellers have every good feature found in any sheller and several important advantages of their own. They shell clean. They do not brake the cob. They do not throw out corn with the cob. They have hand wheel to adjust the sheller to large or small size of cob and successfully shell popcorn. They shell seed corn without cracking the grain. The frames are built of heavy hard wood, securely bolted together, forming a rigid foundation for the working parts, and are neatly varnished so as to make them attractive in appearance. All bearings are mounted on a one piece rigid iron frame, which makes it impossible for the shafts to get out of alignment. The gearing and other working parts are placed inside the frame and thoroughly covered so as to prevent accident and breakages.

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188 RIVER ST. BATAVIA, ILLINOIS
Kansas City, Mo. Minneapolis, Minn. Omaha, Neb.

freezes at 15° above zero; 30% alcohol, 70% water freezes at 18° below zero; 50% alcohol, 50% water freezes at 34° below zero.

Of course it is necessary to add more alcohol from time to time to replace that evaporated out.—F. M. SERVICE.



Rating of Fordson

To the Expert:

Have been following your articles, in **FARM MECHANICS**, entitled "Motor Trouble Advice" with much interest.

In the October issue on page 56 a portion of your answer relating to the Fordson tractor reads: "The Fordson is rated at 10-20 horse power with a draw-bar pull of 1,855 pounds at 2.73 miles per hour. The pulley is driven thru gears and travels at the same speed as the motor, developing 20 horse power at 1,000 revolutions per minute." Would you please inform me of the method by which you arrived at 10 draw bar horse power for the Fordson tractor and the conditions under which you obtained a draw bar pull of 1,855 pounds?

Thanking you in advance for a reply and commending you upon your advice given to the readers of **FARM MECHANICS**.—J. L. LARSON, Instructor in Farm Motors, University of Minnesota.

Answer—In answering the question you refer to in the October issue, we did not state that the Fordson tractor had a draw bar horse power of 10, but that the tractor was rated at 10-20 horse power. This rating is given by the Ford Motor Company in the specifications of the Fordson tractor and is doubtless figured on the S. A. E. formula which is $H. P. = 1.6D^2$.

The draw bar pull of 1,855 pounds at a speed of 2.73 miles per hour, was taken from an actual test of a two-bottom plow working in stiff clay soil, connected to a dynamometer, and when it is considered that a horse will pull only 150 pounds at two miles per hour, when handling a single bottom 14-inch plow, it can plainly be seen that the Fordson has power to spare when connected to the tools recommended for it.

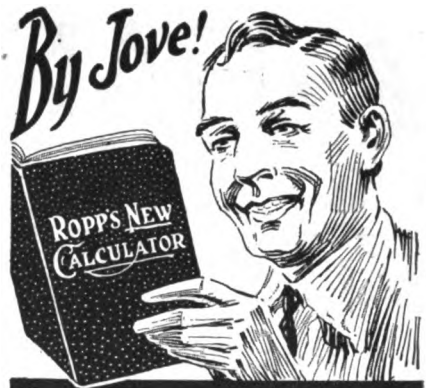
It might also interest you to know that a direct pull was also made at this same test and the dynamometer registered 5,400 pounds before the automatic coupling released and prevented the tractor from going over.—F. M. SERVICE.



PAPER and pencil have as good a memory for household accounts as they do for Christmas lists and new recipes.



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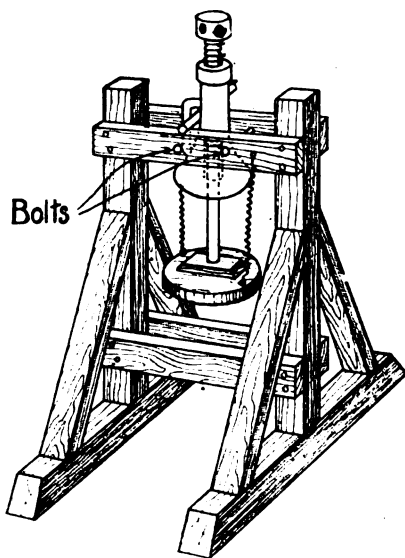
HANDY ANDY'S DEPARTMENT

WHERE FARM MECHANICS READERS CAN PASS ALONG GOOD, TESTED IDEAS.

A Home Made Press

EVERY farm home has need for a press in preparing the various foods and products obtained from the resources available—a cider press at the apple gathering time so that the surplus and the wind falls may be turned into vinegar; a lard press at the hog butchering time, or a fruit press at the various gathering times.

A jack screw can be used to good



Press for Squeezing Fruit Juices, Lard, Etc.

advantage in making such a press very serviceable.

A frame is made of 2x4 and 4x4 timbers and the base of the jack screw clamped between the two top members, as shown, with two bolts, one on each side of the base of the jack. As the screw of the jack does not extend sufficiently low for the purpose an extension has to be provided. For this a piece of 1¼ or 1½-inch pipe is used or a piece of timber will answer if the metal parts are not at hand. This piece, wood or metal, is mortised into a block at the bottom and the block attached rigidly to the plunger which sits on the material to be pressed. As the plunger and shaft is not attached to the screw two springs are necessary to lift it as the screw is turned upward after the pressing job is completed.

For the pressing chamber or crate any wood container having straight

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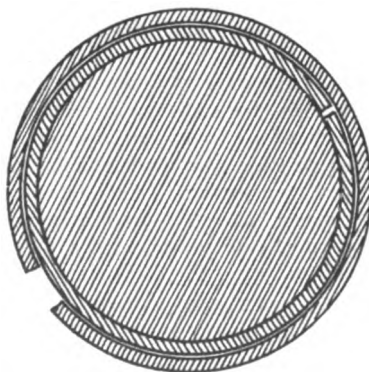
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sides may be used. A candy pail or fish pail with wires wound about it for reinforcement and numerous holes bored thru its side will answer the purpose. The jack screw may be removed in a few minutes time for any job needed, thus the expensive part of the device serves as a double purpose.—G. G. McVicker.



Piston Ring Compressor

DON'T work and sweat and get your fingers all cut up trying to get a piston ring started into the engine



An old piston ring compresses new one

How an Old Piston Ring May Be Used as a Compressor.

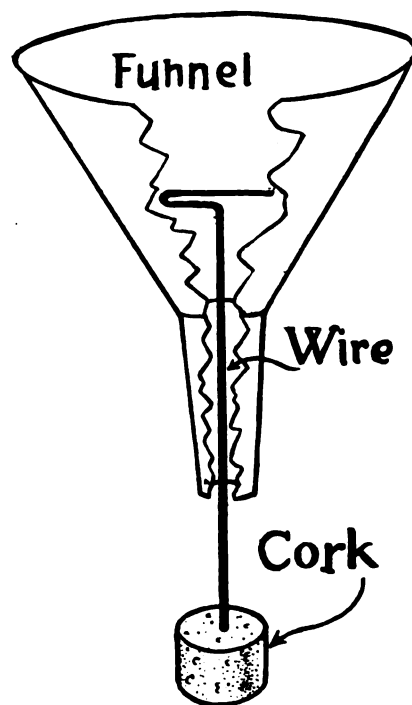
block; just take an old ring and put it over the one you are trying to get in with ends of the ring opposite the ends of the other one. This will make it easy to push the ring together, will hold it and push the piston on thru the outer ring.

I found this to be a great help.—C. HAROLD RIPPER, Armel, Colo.



An Improved Funnel

TO prevent overfilling a vessel with gasoline, kerosene or any other liquid the funnel shown in the sketch will be

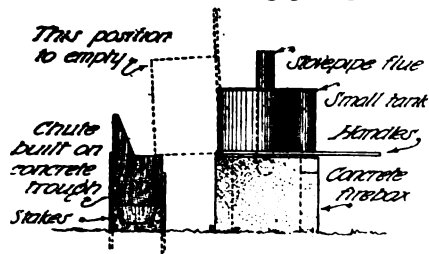


Funnel With Device to Prevent Spilling.

found quite useful. The piece of wood or cork is attached to a piece of wire, the top of the wire being shaped like the letter "T." When any liquid is poured into the funnel the wood or cork is pushed down below the mouth of the funnel about ¼ of an inch. When the vessel is filled with the right quantity of liquid the liquid in the vessel will cause the cork to rise up and touch the lower end of the funnel neck almost closing it thus letting the person filling the vessel know it is time to quit his job.—M. E. UNDERWOOD, Tunnel Hill, Ill.

Hot Feed for Hogs

HOGS like a hot drink on these frosty mornings as well as we do. If you are trying to put weight on those lanky frames, and feeding good grain in

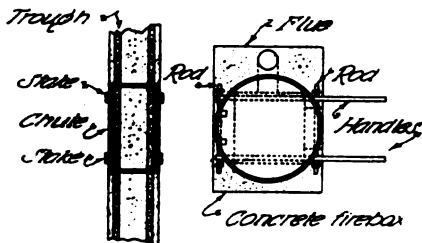


SIDE VIEW

Side View of the Cooker for the Hog House.

the attempt, nothing goes any better with any ration than warm drink in cold weather. The heater shown in the two drawings will be just the thing to take the chill out of the water or swill.

A concrete firebox is built two feet high and somewhat larger than the tank to be used. The one shown is round and



TOP VIEW

Top View of Cooker and Section of Chute.

about three feet in diameter. An opening in the top of the firebox is square and a little smaller than the tank. A hole is allowed near the top, to one end of the firebox where it is continued by the use of a length of stove pipe. Fuel is added thru a small opening on one side.

The tank rests upon two long iron bars, the left-hand ends being curved about a rod which acts as a bearing, and which is held in place by eyes formed in small iron rods imbedded in the concrete. The iron bars are then extended on the right-hand side and become handles by which the tank is emptied. The tank is fastened to these bars by small bolts, run thru the bottoms. A little white lead applied at the time of attachment will stop any leaks. Another rod similar to the one anchoring the handles, and secured in the same way, is provided on the right-hand side, and supports the bars which support the tank.

It is assumed that this has been built in close proximity to the trough. When arranged as shown, the tank can be emptied directly into the trough, but to prevent spilling and interference by

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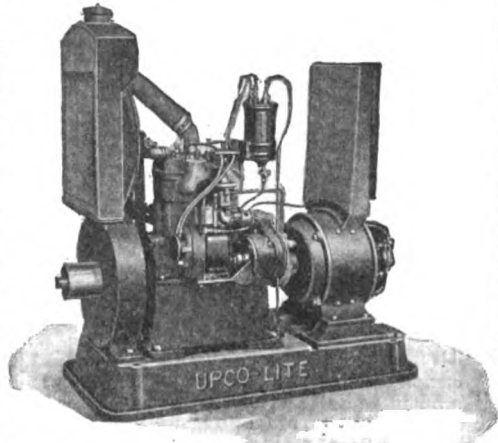
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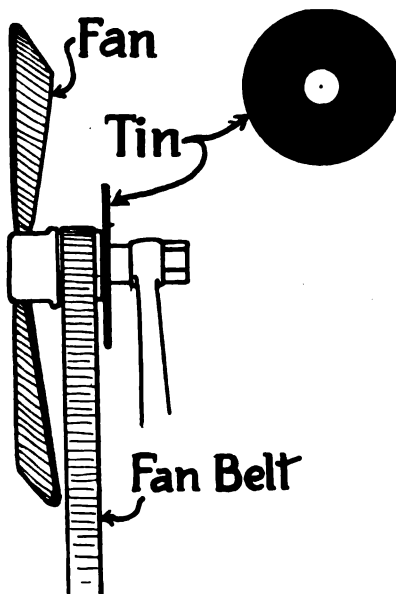
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hungry swine, a short chute, as shown, should be built over the trough as indicated to prevent this. All of the work incidental to this construction can be done by the layman providing he has a few tools, or a shop to use.—DALE R. VAN HORN.

Fan Belt Holder

HERE is a very simple device for holding the belt on the pulley of the fan shaft of a Ford car. It is merely



Round Piece of Tin Holds Fan Belt in Place.

a round piece of tin, cut slightly larger than the pulley and attached to the shaft as shown in the illustration. The tin holds the belt in place and prevents the many troubles that come when the cooling system does not work properly.—K. W. SHUNK, North East, Pa.

A Handy Ash Sifter

CONSIDERABLE can be saved in the way of coal by sifting the furnace ashes. This is usually such a back-breaking task, however, that we are prone to leave it undone.

The sifter shown is adapted from an ordinary rectangular box sieve so suspended in a frame that the weight of the contents is not only supported by the end pieces, but the fine dust falls within, without causing any dust nuisance. The oscillating movement caused by its operation rapidly separates the unburned coal and clinkers from the finer portions and this is enhanced by the striking of the sieve against the sides of the box.

Any dry-goods box will do for the container. Pieces are nailed in the corners on the insides, the tops extending about five inches out of the box. To these are nailed two cross-pieces

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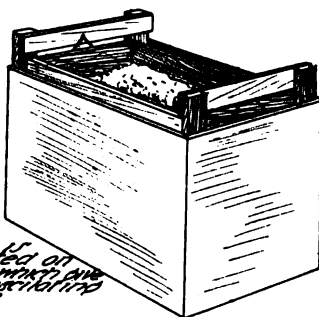
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OTTAWA MFG. CO., 2652J Wood Street
Ottawa, Kansas. Pittsburgh, Pa.

which are provided with a hole each as shown.

Two stiff wires are bent up at each end of the box after being fastened in place on the bottom with staples,



Oscillating Ash Sifter in Box.

and are again bent and the ends thrust thru these holes. The wires are separated by about eight or ten inches at the bottom.

When placed in this fashion, the sieve remains level all the time.

The movable part can be removed at any time by pushing the wires in at the top, thus disengaging them from the holes.

Such a sifter kept in the basement near the furnace will mean economy this winter.—DALE R. VAN HORN.

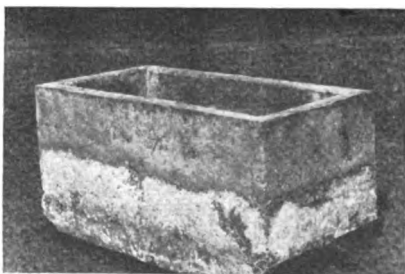


Salting Trough on Skids

HERE'S a concrete salting trough that has many advantages because it can be moved about from place to place. It is on stout runners, just like a sled, and has an iron "eye" at one end to which a team can be hitched for moving it. As it is made of concrete, weather and time have little effect on it.

This trough is to be placed out in the pasture field and moved every week or so. A wise farmer "spots" it on the barest parts of his fields, so that the droppings from the herd will serve to enrich the spots which need building up. The trough is moved on before the stock has had time to tramp out grass around it.

If it can save a barrel of salt, worth, say, \$3 each year, that means the payment of interest on a \$50 investment. Yet the cost is only about a quarter of that.—R. B. JOHNSON, Morgantown, W. Va.



Concrete Salt Box on Skids.

How to Renew Your Light Plant



**Universal
BATTERIES**

If you operate any Farm Light and Power Plant, you want to know about our special Battery Exchange Offer. We take your old, spent batteries, make you a liberal allowance for them and renew your plant with the famous Universals, specially designed for your particular plant.

These time-tested long lasting batteries deliver a constant dependable flow of current. They make your lights burn brilliantly and steadily—no flickering—and provide abundant reserve power for heavy duty. A standard equipment on many of the best Farm Light Plants, thousands of them are now giving uniform satisfaction everywhere.

521 Experiments

Don't buy an unproven battery. Twenty years of successfully building batteries for every kind of use are behind every Universal. 521 costly experiments throughout these years, have developed these truly wonderful all-duty powerful batteries. Universal sealed glass jars are oversize, use low gravity acid, making plates last longer. Extra-size sediment space—no cleaning necessary. Universal Batteries come to you fully charged and sealed—ready to connect right up to your plant—no assembling.

We also make Radio and Automobile Batteries and Repair Parts For Any Make Battery.

Battery Guide Sent FREE

No matter what kind of Plant you have, this interesting book will show you just how to renew the system with Universal Batteries. The right size for every Farm Power and Light System made. It also lists Parts for all makes of batteries. "Care of Batteries" is another valuable treatise; will also be sent free with the new Universal Battery Guide. When you write, mention brand-name and age of your present batteries so that we can give you the correct allowance figure. Write today. (133)

UNIVERSAL BATTERY CO., 3429 So. La Salle St., Chicago, Ill.

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Steel Posts

Last 30 Years

See that Balanced Corrugated Anchor Plate

Our Balanced Corrugated Anchor Plate

makes every post drive straight—braces post in four directions instead of two—prevents leaning. Four Earth Locks cling to soil with bulldog grip. Send for FREE Post Folder describing six exclusive Can't-Sag features.

ROWE MFG. CO. 304 Holton St., Galesburg, Ill.

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No holes to dig; no setting; no tamping; drive 300 a day. Made from High Carbon rust resisting Rail Steel. Prices now down to pre-war basis.

Our Balanced Corrugated Anchor Plate

makes every post drive straight—braces post in four directions instead of two—prevents leaning. Four Earth Locks cling to soil with bulldog grip. Send for FREE Post Folder describing six exclusive Can't-Sag features.

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BOWSHER'S HEAVY-DUTY GRINDERS



FOREMOST AMONG BETTER GRINDERS
Crush and grind all the grains that grow; fine for hogs or coarser for cattle feeding. Corn in husk, Head Kafirs, and all small grains.

Strength, Durability and Service radiate from every line of these Masterful Grinders. Simple but effective in adjustment.

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HERBERT JENNER, Patent Attorney and Mechanical Expert, 624 F St., Washington, D. C. I report if patent obtainable and exact cost. Send for circular.

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FARM LETTERHEADS AND ENVELOPES that are businesslike. Samples free. **HOWIE**, Beebeplain, Vt.

CORDWOOD SAW FRAMES

BUZZ-SAW FRAMES, Blades, Mandrels, Wood-working Machinery, Pulleys, Belting, etc., of every description. Prices way down. Prompt shipments. Catalog free. **GEO. M. WETSCHURACK**, LaFayette, Indiana.

TOBACCO

TOBACCO, KENTUCKY'S NATURAL LEAF mellow smoking, 10 lbs. \$2.25. Hand picked chewing, 8 lbs. \$1.00. Free recipe for preparing. **WALDROP BROTHERS**, Murray, Ky.

FOR SALE AND EXCHANGE

FULL BARREL LOTS Slightly Damaged Dishes, Crockery, Hotel Chinaware, Cookingware, Aluminumware, etc., shipped direct from factory to consumer. Write us. **E. SWASEY COMPANY**, Portland, Maine.

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TYPEWRITERS—All standard makes, \$15 up. Fully guaranteed. Free trial. Write for illustrated Bargain List. **NORTHWESTERN TYPEWRITER EXCHANGE**, 280 Goethe St., Chicago.

FARMS WANTED

GOOD FARM WANTED—Send description and price. **JOHN J. BLACK**, Chipewawa Falls, Wis.

CASH BUYERS want farms, spring delivery. Describe, state lowest cash price. **R. A. MCNOWN**, 362 Wilkinson Bldg., Omaha, Neb.

WANT TO SELL YOUR FARM? Write description and price. **J. WHITE BROWN**, Iowa City, Iowa.

BUSINESS CHANCES

FREE—Formula Catalog. **LABORATORIES**, Boylston Bldg., Chicago, Ill.

FOR AUTOMOBILES

STOP THAT KNOCK. The Jiffy Automatic Connecting Rod Bolt insures a quiet-running motor. It increases the life of your car and saves many dollars in repair bills. No mechanical ability required to install—any one can do it. For Ford, Chevrolet, Overland, Studebaker, and other small cars. Money back if not satisfied. Price, \$3, postpaid, for set of eight. **ILLINOIS SUPPLY CO.**, 1876 E. 71st St., Chicago, Ill.

AUTOMOBILE OWNERS, garagemen, mechanics, send today for free copy of this month's issue. It contains helpful, instructive information on overhauling, ignition troubles, wiring, carburetors, storage batteries, etc. Over 120 pages illustrated. Send for free copy today. **AUTOMOBILE DIGEST**, 648 Butler Bldg., Cincinnati, Ohio.

TIMERS

FOR EASY STARTING and Long Service Guaranteed on Ford Cars and Fordson Tractors—Use a Nelson Ball Bearing Timer. Send \$3.50 to **NELSON TIMER CO.**, 610 East Water St., Milwaukee, Wis.

HELP WANTED

DETECTIVES EARN BIG MONEY. Excellent opportunity. Travel. Experience unnecessary. Particulars free. Write. **AMERICAN DETECTIVE SYSTEM**, 1963 Broadway, N. Y.

MALE HELP WANTED

AMBITIOUS men, write today for attractive proposition, selling subscriptions to America's most popular automobile and sportsman's magazine. Quick sales. Big profits. Pleasant work. **DIGEST PUB. CO.**, 948 Butler Bldg., Cincinnati.

RADIO AND ELECTRICAL SUPPLIES

RADIO AND ELECTRICAL SUPPLIES. Send for free Monthly Bulletin. Everything electrical, from push buttons to farm lighting plants. **HOLMES ELECTRIC CO.**, Dept. B, Libertyville, Ill.

Keeping Out Cold Is a Coal Saver

WITH every one asking how to save fuel this winter, specialists in home economics are offering suggestions, some of them worked out by Government experts.

Weather-proofing the house is advocated. Weather stripping should be put around windows; wood and felt weather stripping can be bought cheaply and may be put up by anyone. It should be placed on the bottom of doors opening inward. Inside doors, between bedrooms and halls, may have weather stripping attached to the bottom so that an open window in any room will not chill the whole house. If the wall line adjoining a window or door frame is irregular, the crack may be closed with strip felting.

Storm doors are a great protection. About ten times as much heat is said to pass thru a window pane as thru a well-built wall. The dead air space between the inner and outer panes of storm windows forms a blanket which excludes cold winds.

Farm Facts

Condensed Items of Interesting Information

Haitians have one implement, the machete, which is similar to a corn knife, that they use in farming, fruit growing, road building, carpentering, and for purposes of offense and defense. Repeated attempts to introduce modern farm implements have failed to wean them away from the machete.

Fifty thousand dollars is the price Frank E. Beatty, of Three Rivers, Mich., is reported to have paid for a single strawberry plant. The purchase was made of Harlow Rockhill, of Conrad, Ia., who developed "Rockhill, America's Greatest Everbearer," a plant that bears in the early summer, takes a rest and then starts again and has fruit until frost comes.

Experiments with corn and barley as hog feed are being conducted by the Canadian Government at Fredericton, N. B. The test is to determine the relative value of the two grains in the production of high grade bacon.

Chinese are great candy eaters. Their choice runs to hard candies, chocolate bars, and butter scotch, and a good market is predicted in China for American manufacturers.

"Better days for the American farmer" were predicted by Dr. Julius Klein, director of the Bureau of Foreign and Domestic Commerce, in an address before the National Council of Farmers' Co-operative Marketing Associations at a recent meeting in Washington. This will be brought about by an intensive development of foreign outlets aided by more effective producing and selling methods, he said.

Austrians like American honey and a good market there awaits American exporters, says a report to the Department of Commerce.

American tractors, sent to Russia by the Mennonite Relief, are now in successful operation. They are in charge of an American agricultural expert. Eight tractors plowed 63 acres in two days. The government is supplying the fuel and oil for the machines.

The average wage for male farm labor for the entire United States on Oct. 1 was \$28.97 a month, with board and lodging, according to the first of a series of quarterly reports from 1,300 county crop reporters to

the United States Department of Agriculture. The average rate for 1921 was \$30.14.

Sales of agricultural implements in Algeria are hampered by many factors. One of the most important is that the native farmer, whose methods are very primitive, is a Mohammedan and a fatalist in religion, and believes that, results being determined in advance, it is beyond his power to change them by any act of his own—and he acts accordingly.

Not enough beans are grown in America to supply the demand, and American importers are scouring the world for a supply. Rumania is an important bean producing country and during the first seven months of 1922 exported 40,000 tons.

Poultrymen of the eastern states will market the eggs from ten million hens co-operatively thru the recently formed Atlantic Coast Poultry Producers Association. The eggs of the members will be pooled and sold in New York and other eastern markets.

Wheat and flax are being grown together in the same fields at the same time in Minnesota, adding \$10 to \$15 to the returns per acre. Experiments are being conducted looking to the growing of flax with barley and oats.



Best Season Here for Taking Farm Inventory

THIS is the best season of the year to take the farm inventory. The supply of feeds is low, salable crops usually have been marketed by this time and little work and money have been expended on the new year's crop. The four or five hours spent in taking the inventory make up about the most profitable half day of work that the farmer can put in during the year.

The annual inventory forms the real foundation for the accounts kept on the farm business. Without the inventory, it is impossible to determine the farm profits for the year or what the farmer is actually worth. Such an inventory makes it possible for the farmer to compare his standing at the end of the year with his standing at the end of the previous year and shows him whether he has lost or made money. Another big advantage of the inventory is the fact that it makes it possible for the farmer to study and analyze the farm business to locate the weak places and take steps to correct them. The inventory also gives the farmer a good excuse to call in the tools and equipment that the neighbors have borrowed so that all equipment of the farm can be brought together and put in condition and its value compared with

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NOTICE TO ADVERTISERS

Forms for the February number of Farm Mechanics will close promptly January 15. New Copy, changes and orders for omissions of advertisements must reach our business office, 1827 Prairie Ave., Chicago, not later than the above date. If new copy is not received by the 15th of the month preceding date of publication the publishers reserve the right to repeat last advertisement on all unexpired contracts.

FARM MECHANICS.

that of the previous year.

The inventory may be taken any time between now and the first of April, altho if it is to be used in making an income tax report, it must be taken January 1. Once started, the inventory should be taken at the same time each year.

Not more than four or five hours should be needed to take and summarize the inventory. It should include a list of real estate, livestock, implements and machinery, feed and supplies on hand and all other property used in the interest of the farm business, to each item of which is assigned a proper value. This value should be conservative and should be, as nearly as possible, what the article would sell for, less the cost of getting it to market, or what it would cost to replace it with an article equally as good. Estimates should be avoided and actual measures, weights and counts be given as nearly as possible.



WOULDN'T a water system in the home be an ideal present for mother and the whole family this spring?

NEXT spring, when tasks pile up so high you can't see over them, you'll sing praises to that "officious county agent" who persuaded you to put on some spray this fall.



FARMERS in Bradley County, Tenn., claim to have saved \$900 by shipping a carload of ducks and chickens co-operatively.



THE peanut crop this year is decidedly short. Just what effect this will have on the 1923 baseball season is not predicted.



MONEY which furnishes feed for good cows is invested, not spent, says one good farmer who gets liberal returns in the form of increased production.



SCIENTISTS have recently discovered that high egg producers can transmit this endowment only thru their male offspring. Thus is king rooster raised once more to his throne.

Sir Walter and the Spud

IN Ireland, they still point to the place where Sir Walter Raleigh planted the potatoes he brought with him from America. The venturesome knight was much impressed with the edible qualities of potatoes and touted them highly to his friends. But in spite of his efforts to popularize the spud, it was half a century or more before it became an article of general consumption abroad.

Today, a new food product becomes nationally known almost overnight. Modern methods of distribution quickly place it in thousands of stores. *Advertising* tells the public about it. People try it, like it, and shortly it is in general use throughout the country.

By the same means American manufacturers—*through advertising*—are putting within your reach many of the boons of modern life. Without advertising, you would lack many of the comforts and conveniences that go to make life what it is in this year of grace.

Advertising keeps your information up-to-snuff on every article of human need, whether it be food, farm machinery, clothing, articles of household utility, necessities or luxuries.

Advertisers deserve your support.

Patronize them.

—Farm Mechanics Magazine



Taking No Chances

An Irishman living in New York started what promised to be a large family. A baby came regularly every year for four years and then there were no more. A friend said to him one day: "Pat, why is it your wife presents you with no more kiddies?"

"I don't want any more. Because," said Pat, "they say every fifth baby born in New York is a Jew."



Not for Him

"Here, boy," said the man to the boy who was helping him drive a bunch of cattle, "hold this bull a minute, will you?"

"No," answered the boy. "I don't mind bein' a director in this company, but I'm derved if I want to be a stockholder."



To Be Expected

Maudie—What's wrong with the car? It squeaks dreadfully.

Jimmie—Can't be helped—there's pig iron in the axles.



Merely Thrifty

Sandy was seen coming out of the first National Bank by his friend, MacGregor, and he was accosted thus by him.

"Been putting some money in the bank, hae ye', Sandy? I ken."

"Nae, nae, no putting money in," answered Sandy.

"Well, it cannot be that ye were taking any out," said MacGregor.

"Nae, nae. I was just in the place filling a fountain pen," answered Sandy.



Wouldn't Stand for Trouble

"Don't stop me," yelled Jimmie. But the man stopped him anyhow.

"What are you running for?" the man asked.

"I'm tryin' to keep two fellers from fightin'," Jimmie gasped.

"What two fellows?"

"Willie Brown and me."



A Bargain in Knockouts

Hook—That would-be "pug" is a cigar store clerk.

Crook—Zatright?

Hook—And when he heard the referee count ten over him, he suggested three for a quarter!

PUBLICATION
OFFICES
CHICAGO, ILLINOIS

FARM

PRICE
40 CENTS
PER COPY

MECHANICS

TITLE REGISTERED, U. S. PATENT OFFICE

A Monthly Magazine Featuring Farm Improvements
Machinery, Equipment, Farm Buildings

Saving the World From Starvation

The Miracle of Modern
Farm Machinery

Pioneered by Cyrus Hall McCormick
and Perfected Now by the
Worldwide "Harvester" Organization



The Bear Tractor



Reserve Power

BROWN was one of those "high powered" fellows. The men who worked with him said that he never "let down." Then one day he confessed that he wasn't "hitting on all six." He put his foot on the gas, but the old machine wouldn't obey his command. He called on his doctor. Careful examination was made. "Well, Doc, what's the verdict," he inquired. "Brown," answered the doctor, "you have got to slow down; you haven't any reserve."

And that was the whole story — *no reserve power!* Whether man or machine, you can't use all the power all the time and keep going. You can't load a tractor to its limit constantly any more than you can a man — without paying a big price for the abuse.

The Bear Tractor has a normal rating of 25 h.p. at the drawbar and that is what it is sold to deliver day in and day out. But in *addition* to this it has available for emergency use another 25 h.p. — *a reserve 25 h.p.* In other words, the Bear has, when needed, 50 h.p. at the drawbar.

Economical tractor performance requires continuous steady operation throughout the work-

ing time. This means that normal speed must be maintained instead of a constant shifting of gears to meet every demand for extra power. In the simplest terms, if you are operating a 25 h.p. tractor, you expect to give it a 25 h.p. load, whatever that may be under the conditions of work. Can you do it? Not unless you have reserve power with which to negotiate those greater-than-average pulls, or are content to shift speeds repeatedly and thereby consume greater time and add proportionately to the cost of doing the job.

Reserve power in a tractor not only makes it possible to maintain a schedule, but means longer life, less time out for repairs, less expense for parts and higher morale among the operators — the sum of which is profit to the owner.

Because of excellent design, skilled craftsmanship, light weight, extreme compactness, great flexibility, unusual mechanical efficiency, and wide adaptability, the Bear takes the leadership among competing crawler tractors.

Get acquainted with the Bear — *the tractor that delivers its power to the drawbar.* The price is \$4250.

Every tractor distributor, dealer and user should send at once for copy of catalog. Distributors and dealers are invited to ask regarding open territory. Franchisees are being let rapidly.

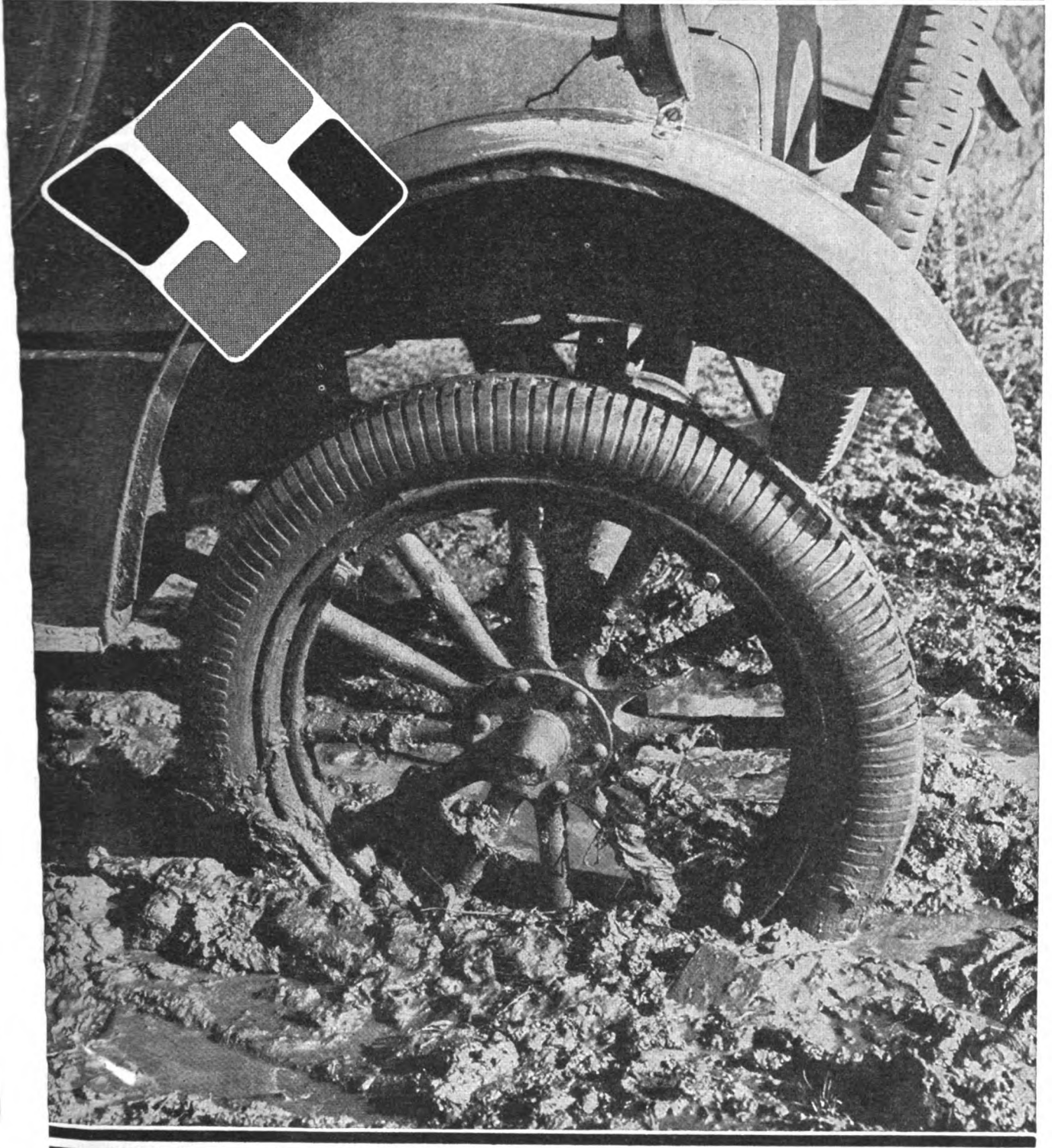
BEAR TRACTORS INC. 5314 PARK PLACE NEW YORK CITY

The Tractor that Delivers its Power to the Drawbar

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

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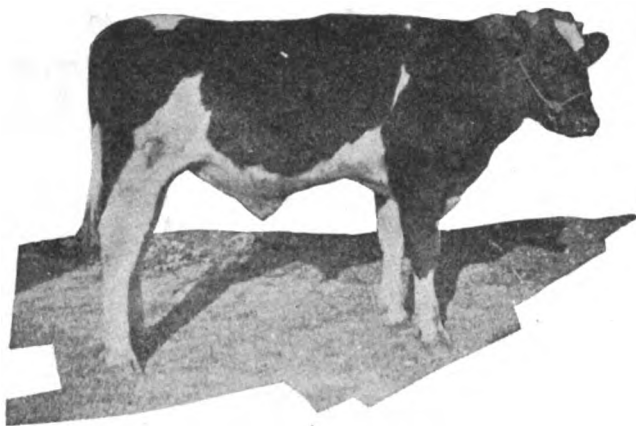
Get You Out Again



"ALL-TREAD"

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

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PABST CREATOR MATADOR SEGIS, ear tag 566, born March 2, 1922. His dam is a 25-lb. four year old daughter of Matador Segis Walker now on year test. His sire is a Creator. He is a handsome young bull. Price \$350.00.

CREATOR IS the sire of 9 two-year olds from 20-lbs. to 26-lbs. of butter in seven days. His first yearly record daughter has just finished with 955.7-lbs. of butter and 20,649.6-lbs. of milk at the age of 1 year, 11 months, 18 days.

The Following Are the Oldest Sons Of Creator We Have Left

Ear tag 565, born February 27, 1922. Dam, a 25-lb. four year old daughter of King Pontiac Champion and a full sister to Pabst Goldenrod who has 37-lbs. of butter in seven days and 1139-lbs. for the year. The young bull is more white than black, is straight, deep and growthy. Price \$300.00.

Ear tag 569, born March 9, 1922. Dam, an almost 27-lb. daughter of a 39-lb. bull whose dam also has 1043-lbs. of butter for the year and whose full sister is a 37-lb. cow with over 1000-lbs. of butter in 365 days. He is an absolutely straight calf, nicely marked, more white than black. Price \$350.00.

PABST STOCK FARM

OCONOMOWOC, WISCONSIN

Herd Under Federal Supervision Last Test 100% Clean

Lincoln-Light

Individual Electric Systems

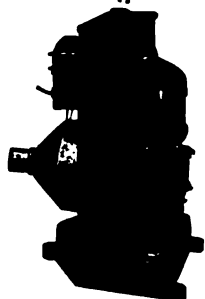
Self Cranking—Self Oiling—Self Stopping

Knowing the value of a quiet, easy running light plant and knowing the destructive force of many heavy moving parts, the LINCOLN system was designed with only 3 MOVING PARTS.

It is, therefore, essentially a long-life, highly efficient system. Wherever shown, its apparent superiority is a positive sales making factor.

Dealers Are Wanted In Many Excellent Territories.

Lincoln Light Corporation
Grafton, Wisconsin



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FARM MECHANICS

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Our Page of Bargains!

EVERY friend or subscriber of FARM MECHANICS is invited to take advantage of the special magazine bargains listed below. Here you will find popular, worth-while magazines clubbed with FARM MECHANICS at sharply reduced prices. Each club represents a substantial saving and the variety is such as to please every member of the family. Use the coupon at the bottom of the page when ordering. If you are already a reader, we shall extend your subscription to FARM MECHANICS a year.

Our Star Bargain Offer No. R

Farm Mechanics (Monthly).....	ALL SIX FOR ONE YEAR FOR \$1.50
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The Household (Monthly).....	
Farm Mechanics (Monthly).....	

USE THIS MONEY SAVING COUPON, TEAR OFF HERE

FARM MECHANICS,
1827 Prairie Ave.,
Chicago, Illinois.

Date_____

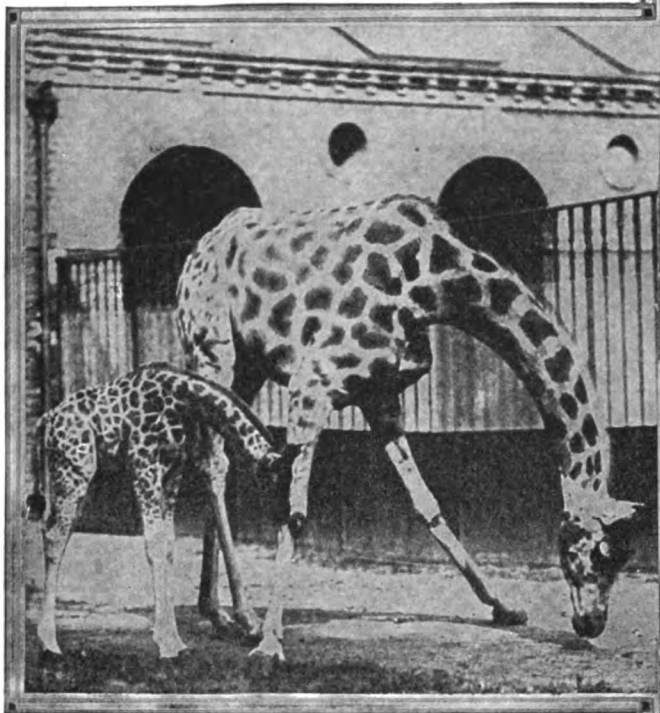
Enclosed find \$_____, for which please
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given in February Harvester Number Farm Mechanics.

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MOTHER AND BABE. Few giraffes have been born in captivity, but this one was. The picture was taken when the youngster was only a few days old.



RIGHT IN THE MOUTH. This cat has an eye for direction, and even rises on its hind feet to get its dinner. The picture was taken in England.



CHUMS. Here's a mighty hunter and his hunting dogs. They're pals, all right, as will be seen by the contented look on the dog's face.



MULE'S PANTS. Putting pants on the mule is for the purpose of keeping off the flies. Knowing a mule's disposition, no one could be found to put pants on his hind legs.



40 Pounds

$\frac{3}{4}$ Horse Power at 1800 R.P.M.—Single Cylinder— $2\frac{1}{4}$ inch Piston— $2\frac{1}{4}$ inch Stroke. 4 Cycle—Air Cooled—Set jet carburetor—Flywheel Magneto—Standard motorcycle sparkplugs—Splash and Sight Feed Oiling.

Centrifugal flywheel Governor—Pull Starter—Built-in Flywheel Blower assures perfect cooling—Runs 10 hours on a gallon of gasoline.

The Biggest, Sturdiest Power Plant ever put up in an Armful

4 CYCLE — just like your automobile engine. None of the 2-cycle power losses or hard starting. No waste through hap-hazard intake and exhaust action as in 2-cycle design. Valves operate mechanically — action is positive, accurate. A real *power plant* not just a farm engine. Dependable! *Full power* for every square inch of cylinder and pound of weight. That's why it's called

"Fullpower" 4 Cycle Engine

Is stripped of every ounce of unnecessary weight without sacrifice of strength. Sturdy in the extreme yet weighs only 40 pounds.

Half-Horse-Power

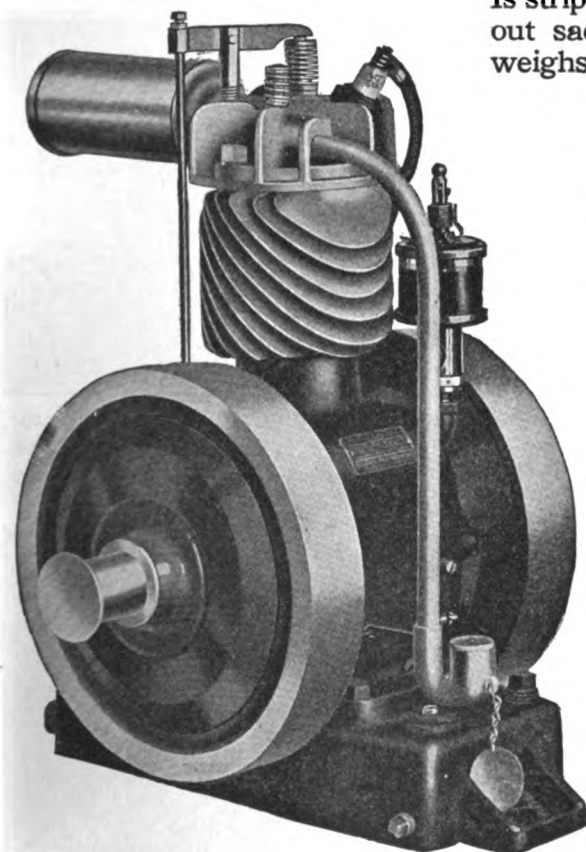
Called "half-horse" — but develops as high as three quarters at 1800 r. p. m.—fifty per cent over its rating. Economical. Runs over 10 hours on a gallon of gas. Can you beat that? Oil? You hardly know it uses oil. And it's air-cooled—no water nuisances. Cold weather or hot, a powerful blower in flywheel keeps "Fullpower" at an economical, maximum power temperature.

All-round Farm Convenience

Milking machines, water pumps, churns, washing machines, small electric light plants—all these are typical "Fullpower" jobs. Pick your power plant up if you like—take it where it's needed. Hook her up, give the starting strap a pull, and away she goes. Everything so simple that troubles are practically unknown. No outside piping—no extra attachments. Gas tank conveniently located in the base.

You should see one of the complete folders on this wonderful little power plant to appreciate it. Tells all about it — *everything* you want to know. See one! Use the coupon. Fill in your name and address and we'll send a folder promptly. No obligation whatsoever.

Briggs & Stratton Co., Milwaukee, Wisconsin
 Gentlemen—
 Without cost or obligation please send me one of your "Fullpower" folders telling all about this 40 pound 4 cycle engine.
 Name _____
 Address _____

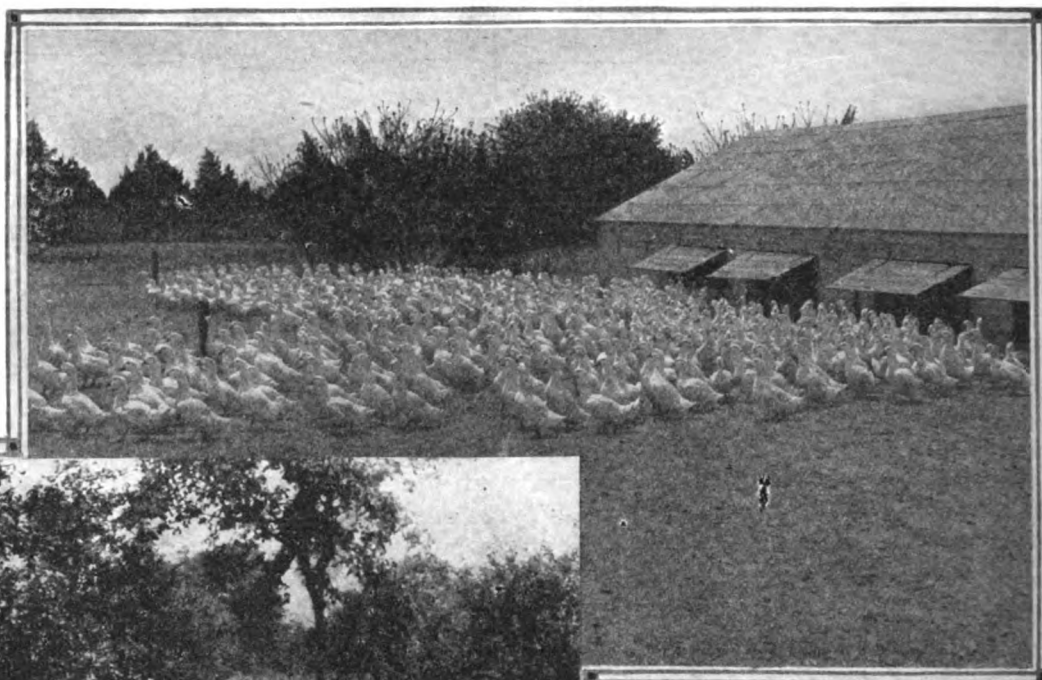


Briggs & Stratton Co.
 Milwaukee PRODUCT Wisconsin

Farm Mechanics Pictorial

JUST DUCKS.

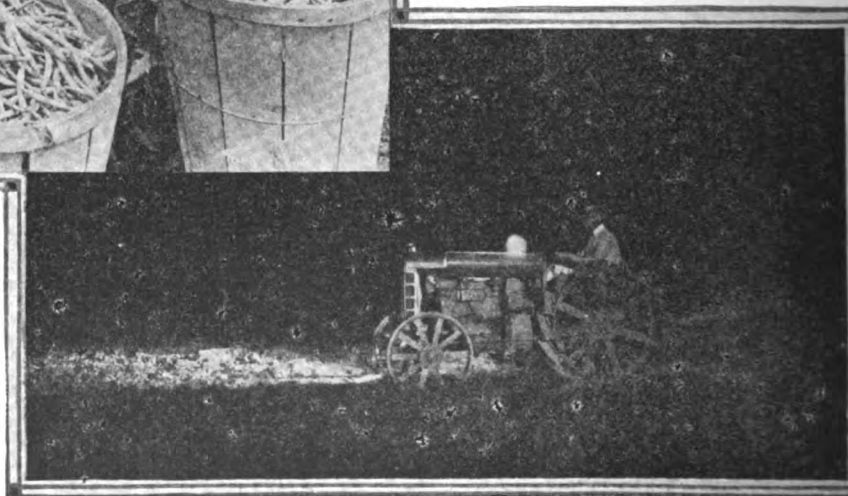
This picture was taken on a Long Island duck farm and shows a part of the flock on its way for the morning bath.



IT'S A GARAGE. This building looks like a basement barn, but it's a farm garage and implement house.



NIGHT WORK. When the tractor is equipped with good, strong electric lights it gets no rest in the busy season.



PICKING BEANS. String beans find a ready market at all seasons. Here is a view in a field that produced many hampers of beans of excellent quality. Care in picking and packing means top price.



Hook Up a Papec To Your Tractor

When silo-filling time comes around, hook up a Papec to your tractor. You'll be amazed at the way this outfit will eat up the corn. You can run season after season without a single shutdown from clogging. And the draft will be play for your tractor.

Improved Model for 1923

The 1923 Papec is a distinct improvement over any previous model. For one thing, the improved Self-feed Third Roll saves a man at the feed table. You know what that means with help so scarce and high.

Then there's the new Angle-steel Link Belt, so tough that it springs back after being bent under 190 pounds pressure.

The throat has been considerably enlarged, giving each size greater cutting capacity.

Papec Price Reduced

Not satisfied with giving you a new and better Papec for 1923, we have **reduced the price**. In fact, you can buy any of our four sizes today practically on a pre-war basis. This is your opportunity. Order early.

Catalog and Account Book FREE

Tell us the size of silo you have or intend to buy and mention your dealer's name. We'll send you **free** a Farmer's Record and Account Book, arranged to show the profit or loss in every branch of your farming business. Write for it today. Ask for the Papec 1923 Catalog.

These Tractor Owners Prefer the Papec

I have used one of your L-16 Cutters about 10 years, filling three silos each year using Titan and Fordson tractors. Its ability to fill high silos comes up to your claims.

A. K. Reindahl,
Madison, Wis.

We are sending you a photo of our L-16 Papec Cutter filling our four large Indiana Silos. We used a 10-20 tractor, and it handled it fine. We filled with as heavy corn as grown in Iowa this season. We never had a hot box or any trouble with Cutter.

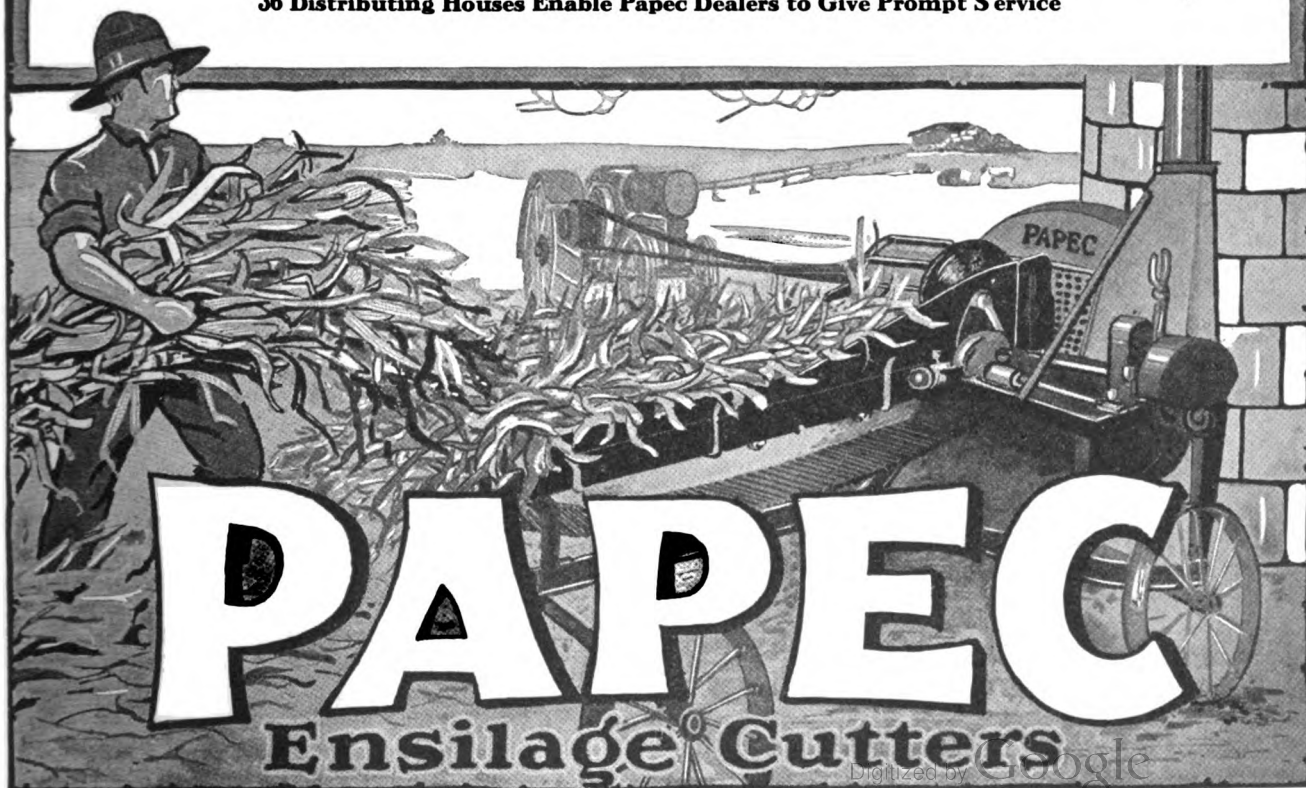
Bradley & Harbold,
Sedan, Iowa

PAPEC MACHINE COMPANY

168 Main Street

Shortsville, New York

36 Distributing Houses Enable Papec Dealers to Give Prompt Service



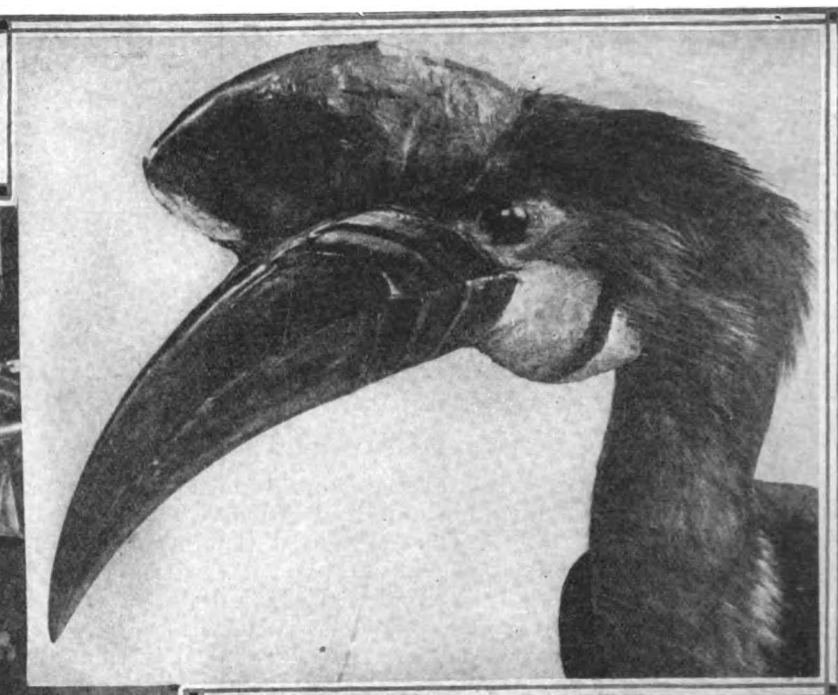
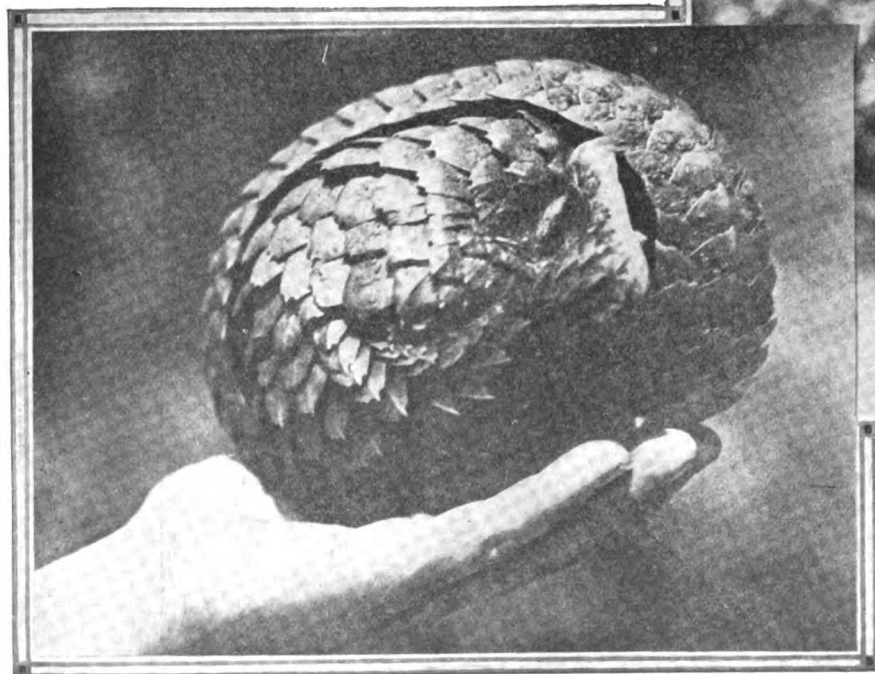
PAPEC

Ensilage Cutters

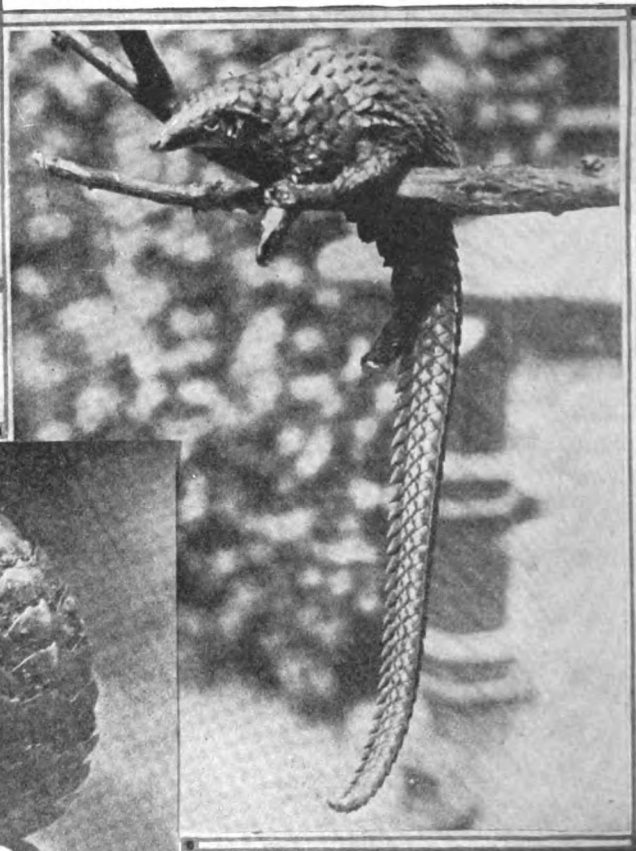
IT'S A DOG'S LIFE that this X-ray machine is designed to save. Mrs. E. G. Hubbel, a Boston lover of pets, keeps the machine so that the animals may have the advantage of science when anything is the matter with them.



ASLEEP. Below is the "Panjolin," an animal that somewhat resembles the porcupine. It hails from Central America, and this is how it looks when hiding from its enemies.



SOME BIRD and it's too bad that it cannot be shown in colors, as its bill is a brilliant blue, red and yellow. Its name is "Indian Nashor," and its home is in Germany.



AWAKE. Here is another picture of the "Panjolin." This is how he looks when he is up and doing. He is covered with thick scales as a body protection.

The only Farm Plant backed by 54 years' electrical experience

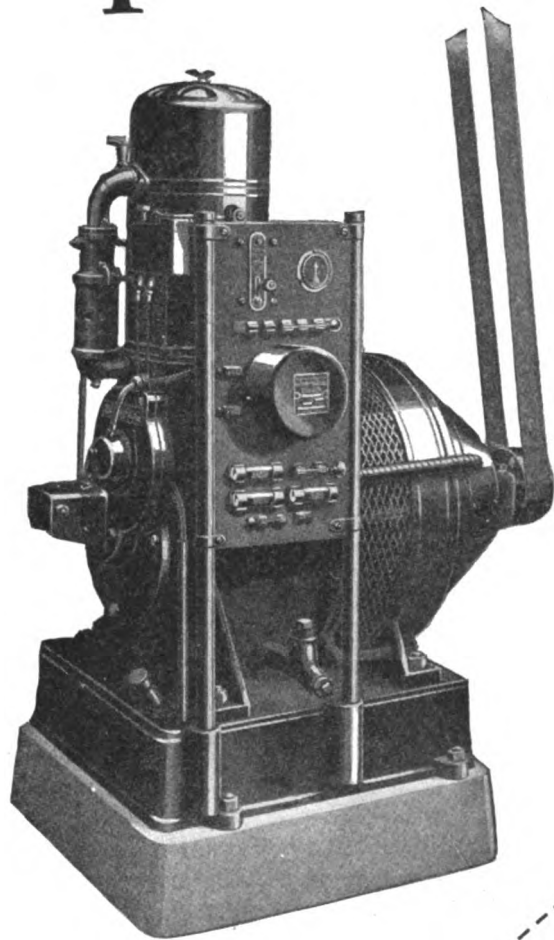
WHEN you buy a Western Electric Power and Light Outfit, you get something that no other one can give you. You get a guarantee backed by a company with 54 years' electrical reputation.

You can depend on your Western Electric Outfit to work right because engineers who knew their business designed and built it.

They equipped it with a powerful engine and a pulley for mechanical power. They devised the famous "tapering charge," to give your batteries long life.

Farmers everywhere know that Western Electric Power and Light is the right outfit to buy.

*Dealers: Some good territory still
open for live-wire representatives.*



Western Electric Power & Light

MORE POWER TO YOU

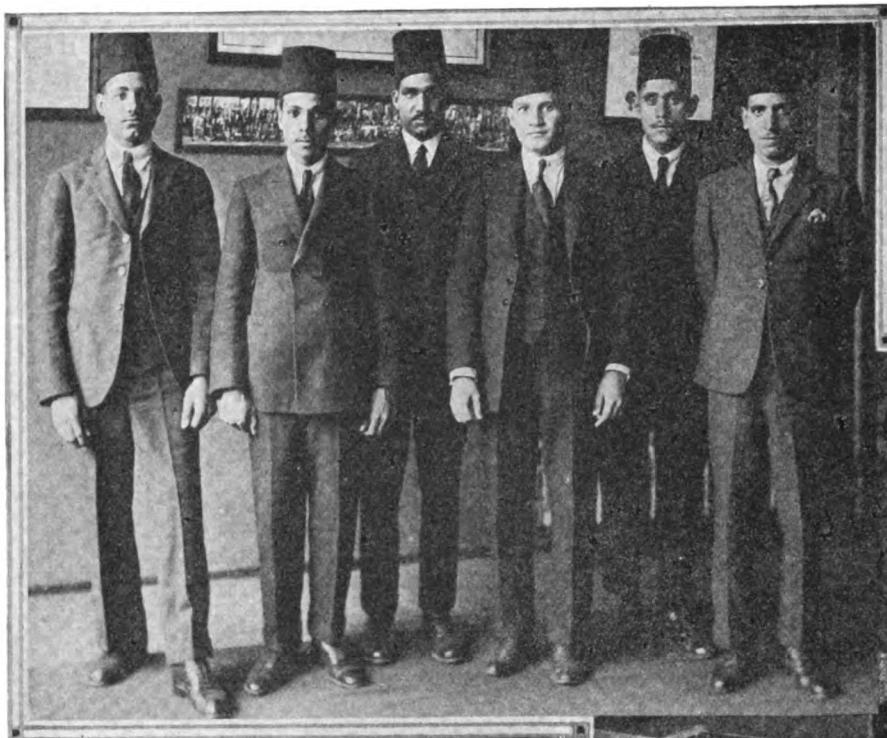
**Mail
this
coupon**

You will want
to hear more about
this powerful electric
outfit at low cost.

Write for Booklet F. M. I. to
Western Electric Co., Power and
Light Department, 195 Broadway,
New York City.

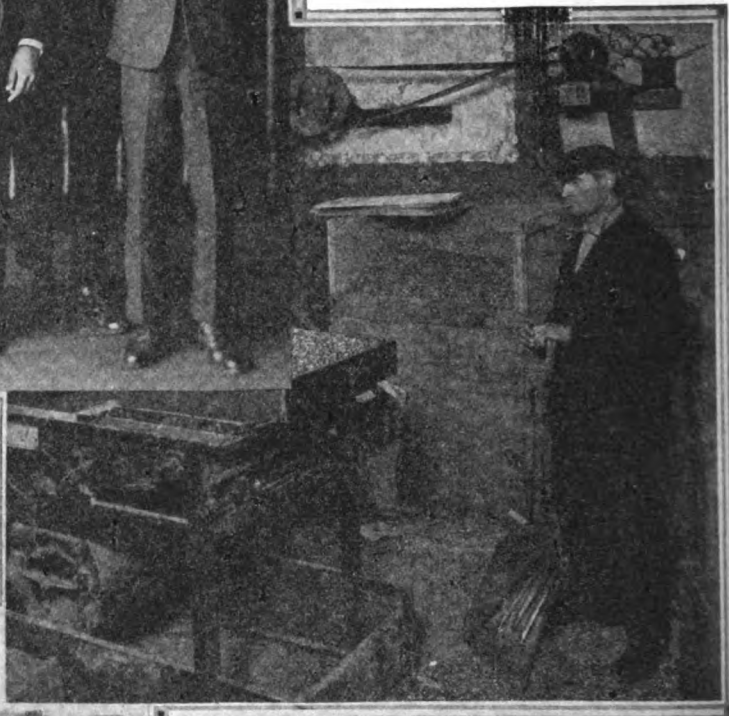
Name

Address



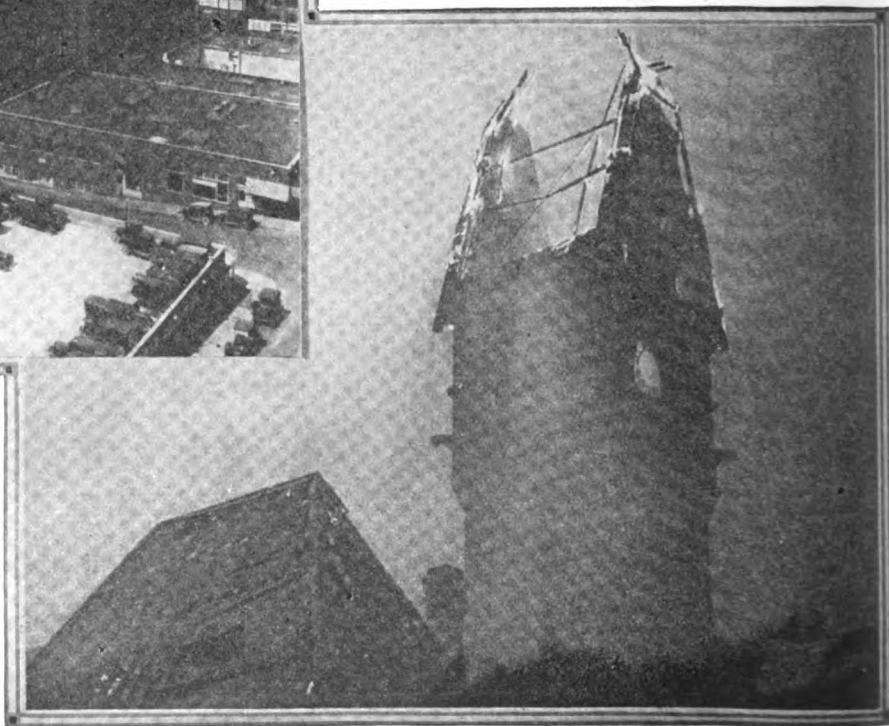
AUTOISTS FROM EGYPT. The six young men shown in the picture came to Detroit to learn how to run and fix automobiles. They were sent by the Egyptian government.

PARKED ON THE ROOF. Below is a novel garage. It is the top of a roof in the downtown section of Seattle, Wash. An incline runs up one side of the building and the cars are driven up.



THE CORN KING. He's Peter Lux and he lives in Johnson County, Indiana. At the hay and grain show he was awarded grand championship honors for the best ten ears.

FIRE. Probably most readers of Farm Mechanics who have been in Chicago remember the Polk Street Depot, as it was built 40 years ago. Recently it burned; this picture was taken just as the tower roof caved in.



The Work of the Month



FEBRUARY and March see the breaking up of winter, and near the close bring signs of spring. These are the months when preparations for the start of the season's work are made. There is much to do about the farm building group, cleaning up and making the repairs that cannot be made later, but need to be done.



FIRST and foremost of the season's preparations is putting the machinery and implements into condition. Repair parts needed should be ordered at once, so that they may be received and put in place as quickly as possible. Seed should be cleaned and it is also good practice to test its germinating qualities. No large, good quality crop ever was grown with poor seed.



HERE'S some advice from the U. S. Department of Agriculture: If you plan to farm this spring better rent a big one than to buy a small one if your capital is limited. If renting, ask your state agricultural college for a form of lease. Farm leases have been standardized and give both the lessor and lessee a fair deal.



MATE the breeding pens for eggs for hatching, if this already has not been done. Give the breeders access to range when the weather permits, as active hens produce better eggs and more of them. One male to 10 or 12 hens is the standard mating. Keep the eggs in an even temperature where they will not chill.



TRY out the incubator and see that it is in good working order before starting the hatch. And get the brooder in readiness several days before the hatch is due to come off. Early hatched chicks are the more profitable.



IF the manure has been allowed to accumulate during the winter months, get it onto the land as quickly as possible. If applied before planting, manure is liable to cause small grains to lodge. It will do the most good on the grass or corn land.



THIS is the season of farmers' institutes and short courses at the universities. Both of these meetings are worth a great deal, as the speakers and instructors have selected subjects that mean better farming methods and more profitable farming.

THIS is the time in the year for dormant spraying to control the fruit tree pests. Lime-sulfur and Bordeaux mixture are the two sprays most used. Put on with a power sprayer they are most effective, as by this means every portion of the tree is covered. Bands of sticky material or cotton batting are used to control the spring canker-worm, as they prevent the moths

from laying their eggs up in the tree and the ascent of the caterpillar.



DRY, warm and comfortable quarters for the brood sows will insure the health of the young pigs. The pens should have rails to protect the youngsters from injury by their mothers. Plank floors in part of the pens with quantities of bedding keep the pigs from becoming chilled.



GOOD LIGHTING in the home means less work, more comfort and better health. There is no light more efficient than electric. Home lighting plants are not expensive to run and besides light provide the power for home equipment and small motors for the separator, washing machine, etc.



UNLESS the stable in which the cows are kept is equipped with a ventilating system, the barn should not be closed tightly. Fresh air is needed if the animals are to be healthy. A window, hinged at the bottom, so that it will tilt in permits the entrance of fresh air without its blowing directly on the animals. Cows need more feed in winter than in summer to keep up the milk flow. A good feeding rule is to give them all the alfalfa or clover hay they will clean up, together with ensilage or roots. The grain ration should be one pound of grain to every three or four pounds of milk the cow produces.



ODDTIME winter jobs that bring satisfaction are those that the home maker wants done in the house. There may be some shelves that were wanted last summer, but which were not put up because of lack of opportunity. Or there may be some painting that is needed.



GRAIN rations of a half to three-quarters of a pound daily for each ewe two or three weeks before lambing help insure a good flow of milk.



THE dealer and the farmer both buy a tractor for the same reason—profit. If the tractor needs a lot of servicing both lose money. So each has a mighty vital reason for wanting that tractor Hyatt-equipped. They both know Hyatt Roller Bearings seldom need replacement, never need adjustment, require a minimum of attention.

For a complete list of Hyatt Equipped Tractors and Implements write:

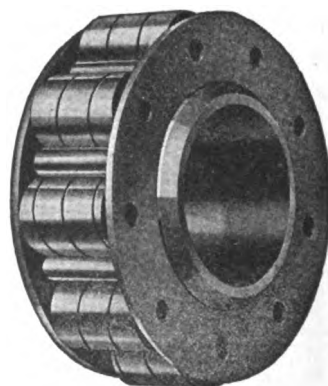
HYATT ROLLER BEARING COMPANY

Tractor and Implement Bearings Division, Chicago
Industrial Bearings Division, New York

Motor Bearings Division, Detroit
Pacific Coast Division, San Francisco, Calif.

HYATT

ROLLER BEARINGS



**NO ADJUSTMENT OF ANY KIND POSSIBLE
OR NECESSARY—ABSOLUTELY FOOL PROOF**

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS



Something to be Proud of

WE ARE extremely proud of this feature issue of FARM MECHANICS, for it offers its readers an unusual value, both in quantity and quality of reading. The special feature of this issue is the story of the International Harvester Co., its achievements and what its founders and their successors have done for American Agriculture. Besides there are the usual good features, including the second installment of Prof. Ivan Wright's series on "How the Farmer is Financed," and another article on marketing by Edward N. Wentworth, who has given the hog raisers some excellent advice about marketing their animals. All together there are about 100 pages of good reading matter in this issue, besides hundreds of good, clear illustrations. Real value is what FARM MECHANICS aims to give its readers—and succeeds in doing so.



Maple Sugar Time

THOSE words—"Maple Sugar Time"—recall, as Mr. Briggs puts it, "The Days of Real Sport." Many a night have we spent in the sugar bush, working hard, it is true, but having a lot of fun at the same time, not to mention the sap to drink and the sugar to eat. But aside from the fun the youngsters get out of maple sugar time, it is well worth the time of everyone who has hard maple trees to tap them, gather the sap and boil it down. The syrup comes in pretty handy next winter for the buck-wheat cakes, while if there is an excess it now sells for a high figure.



Treat Seed Oats for Smut

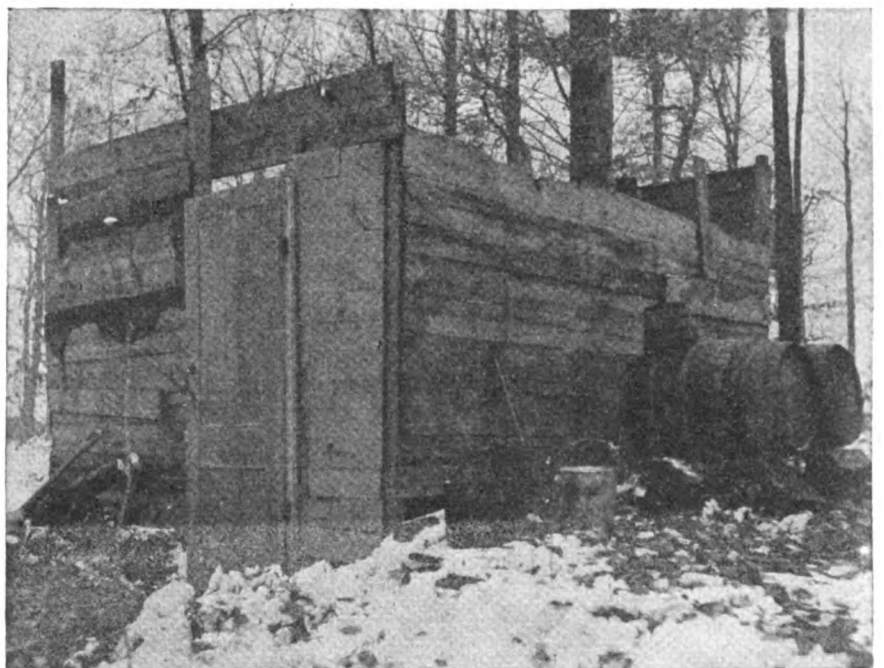
ARE you treating your seed oats for smut this year? asks the crop specialists of the Nebraska Agricultural College. Do you know the best way to do it? Do you know that the time spent in this is worth more in dollars and cents than most anything else you do on the farm? Think of it: you can treat enough in two hours to plant 40 to 60 acres. An increase of one bushel to the acre means 60 bushels

on 60 acres. This at 35 cents a bushel is \$21. In other words your time would be worth \$10.50 per hour if you got only a bushel increase per acre. It is seldom that seed treatment does not increase the yield from three to five bushels and many times twice that much. A five-bushel increase would make your time spent in seed treatment worth \$52.50 per hour. Think it over. Here is the treatment recommended by the Agricultural College. As the seed is being shoveled into the wagon to be taken to the field to seed, have the boy or the good wife sprinkle it with a solution made of one pint of formaldehyde to ten gallons of water. Use this on about 40 bushels.

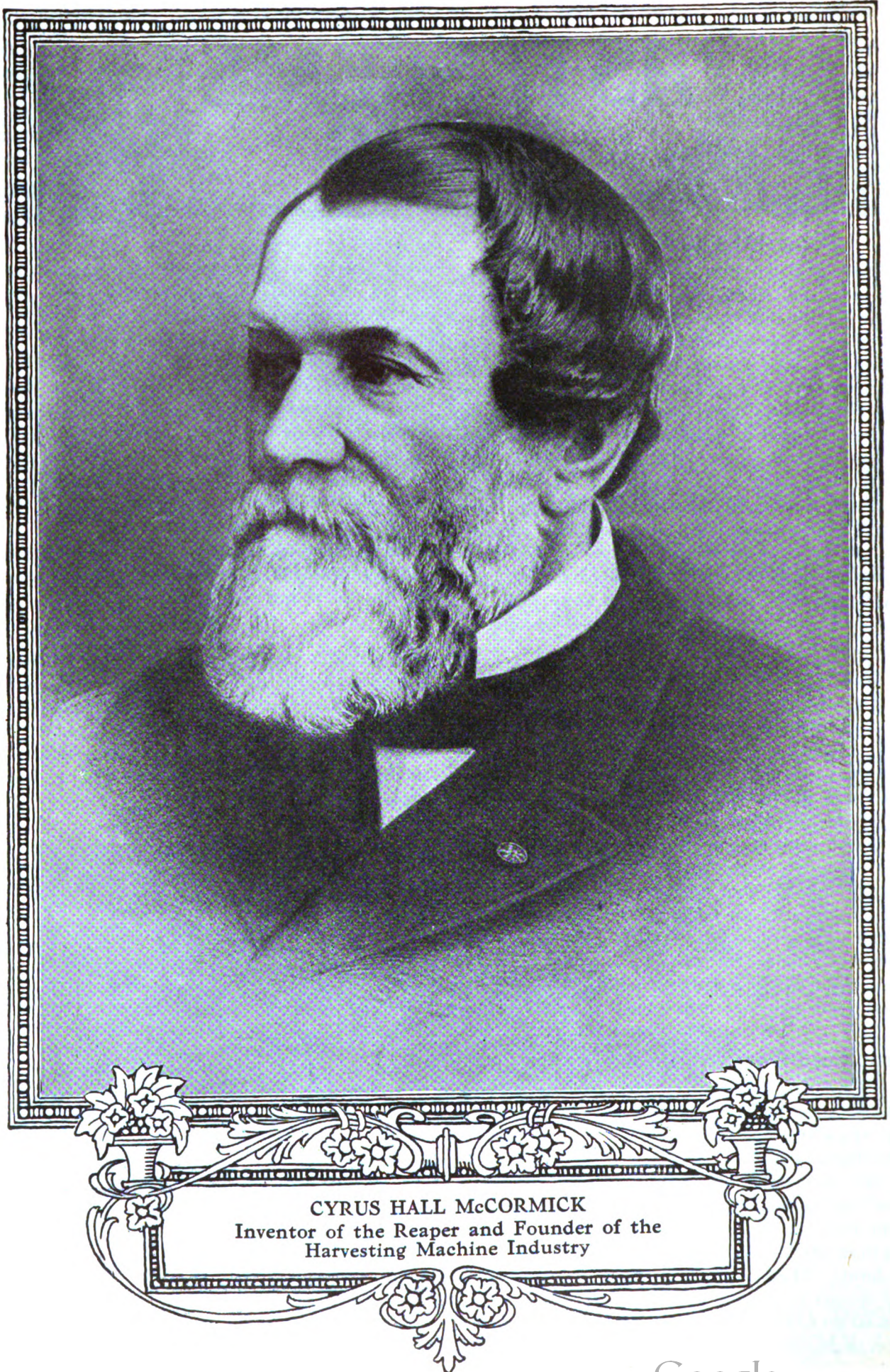
Can anything be easier? Try it. Be sure to get your formaldehyde in sealed bottles. Otherwise it may be weak and of no value.



IN RHODE ISLAND experimental fields, alfalfa grown continuously for ten years on the same field by S. C. Damon, of the State Agricultural College, made an average yield of 2.5 tons an acre. Alfalfa seeded in July produced as well as that sown in April and drilling the seed in proved superior to the broadcast method of sowing.



Outside the Maple Sugar Shanty There Are Two Barrels into Which the Sap Is Poured and from Which the Sap Flows by Gravity to the Evaporating Pan.



Saving the World from Starvation

From McCormick, the Pioneer, to the Present Day McCormick-Deering Dealer with His Complete Line of Farm Operating Equipment and His Efficient Service

By BERNARD L. JOHNSON,
Editor, Farm Mechanics Magazine

STARVATION—famine!

These words have a far-away sound. We associate them with India—China—and, more recently, Russia. Backward, primitive countries, all of them, where modern farming is not understood, nor its methods practiced.

We, out of our surplus foodstuffs, are feeding the world; and our ability to do it is the wonder and amazement of Europe—little accustomed as it is to



The Harvesting Tool of the Ancients, a Hand-Forged Sickle.

the mass production methods that have come, during the past half century, to be our regular American farming methods.

American labor-saving farm machinery has saved and is saving the world from starvation.

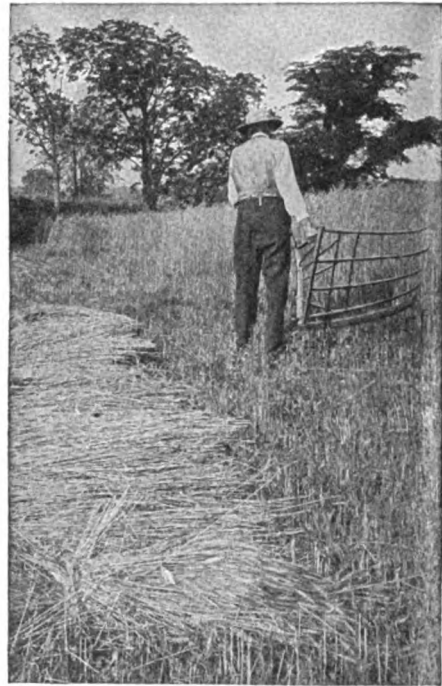
The victory over famine that has been achieved for mankind by the grain reaper—and by the train of other improved farm implements that have followed the introduction of the reaper—has been so completely won that most of us today never give a thought to that old, age-long battle against hunger that the human race waged up to the middle of the nineteenth century. In fact, few of us today even know that there was such a battle—so completely has it been won and so far into the realm of the unreal and impossible has that old fear of bread shortage been pushed.

Modern farm machinery, headed by the grain binder, has reduced the cost of wheat to less than *ten minutes* per bushel.

Whereas in olden times every bushel of wheat represented the sweaty toil of one man for three hours and forty minutes, the present day farmer, with his good machinery, clicks it off in ten minutes or less. In other words, the labor of producing our basic foodstuff—the staff of life—has been reduced 95 per cent. Corn, cotton, hay, oats, potatoes, rice, rye, all are now produced in but a small fraction of the time formerly required by primitive

methods. The miracle of modern farm machinery has released five out of every six men from food production to other productive work of modern civilization.

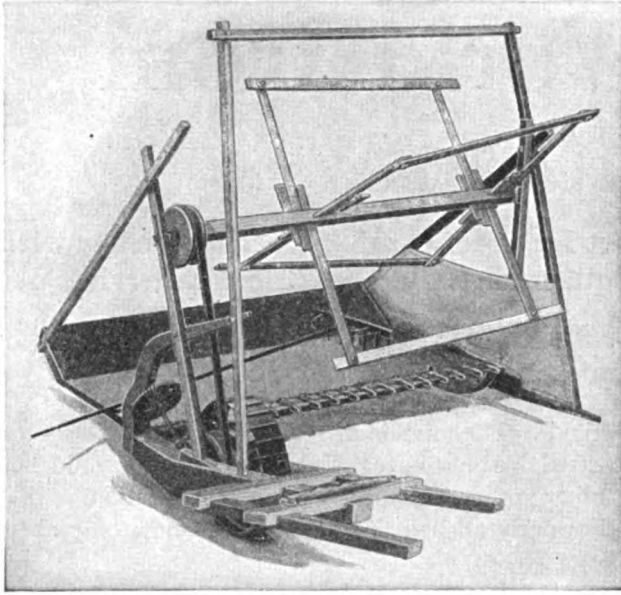
Formerly all had to toil for food—now only about



The Cradle Was the First Step Toward an Efficient Harvesting Tool. With it a vigorous man could cut two acres a day.



The Scythe Was a Big Improvement Over the Sickle.



Model of the Original Reaper Invented by Cyrus Hall McCormick in 1831.

10 per cent of our population does all the actual farm work. The other 90 per cent makes automobiles, clothing, houses, books, and radio outfits that increase the joy of living.

But *starvation—famine*, you say; those are strange words; surely, you don't mean to apply them to this plenteous land of ours!

Yes. Plenteous it is—now. Enough for all our own needs and to spare. Enough so that we can ship

abroad upwards of a billion dollars worth of grain each year. But it was not always so.

Before McCormick had sold his first reaper—back in 1837—famine stalked in America. Flour mills had to close for lack of wheat. Starving men fell in the streets of New York, Boston and Philadelphia. There were bread riots, when mobs of hungry men, women and children, maddened by the fear of famine, broke into shops and warehouses to get the scant supplies of wheat.

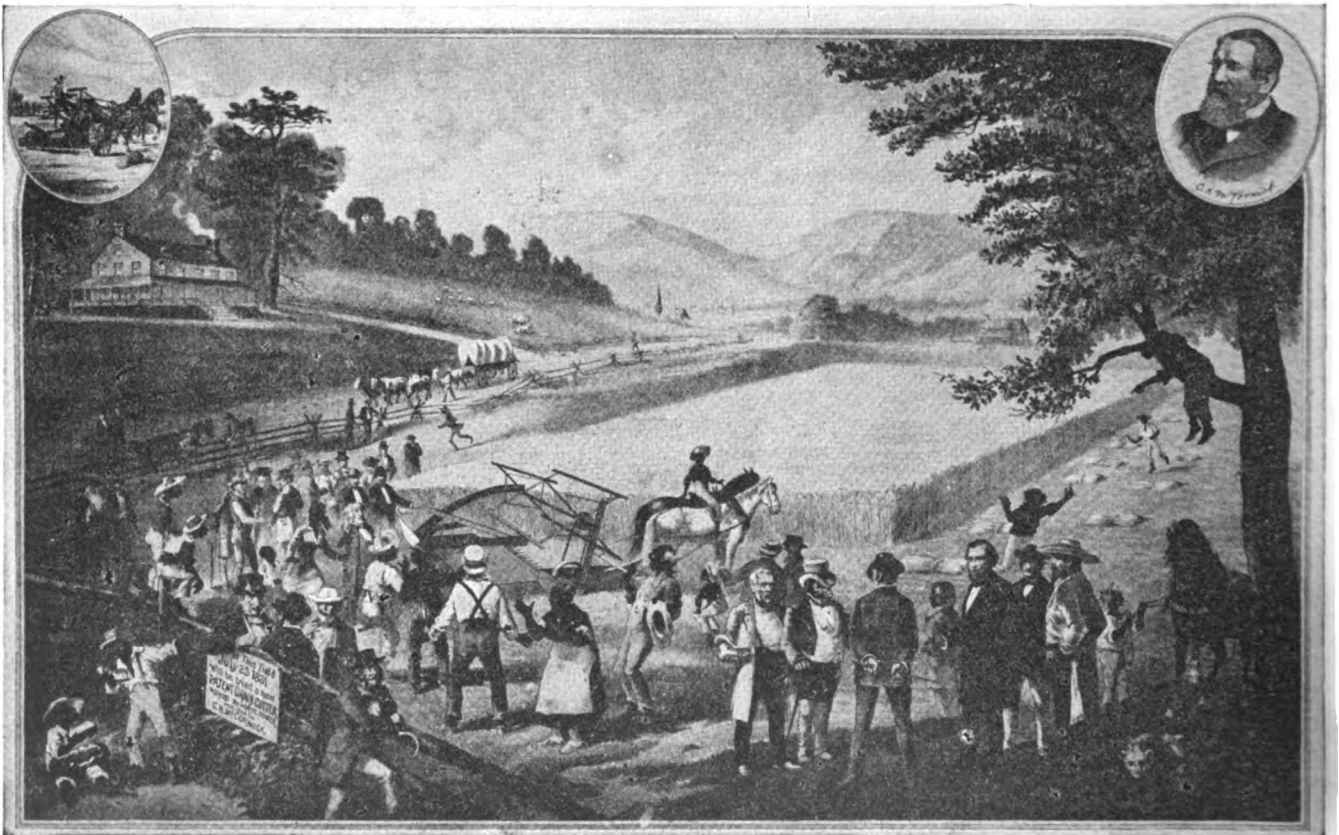
Hard as it is for us to realize, the big endeavor of all peoples, up to just a little time ago, was to get food—to fight back famine.

As Herbert N. Casson has so well expressed it:

“Without the magical grain machinery that gives us cheap bread, the whole new structure of our civilization with all its dazzling luxuries and refinements would be withered by the blight of famine. The reaper has done more to chase the wolf from the door—to abolish poverty and drudgery and hand labor—than any other invention.

“And, it is the reaper, too, which has done most to make possible a nobler human race by lessening the power of that ancient motive—the search for food. Every harvester that clicks its way thru the yellow grain means more than bread. It means more comfort, more travel, more art and music, more books and education.

“This magical machinery of the wheat field solves the mystery of prosperity. It explains the New Farmer and the miracles of scientific agriculture. It accounts



This Reproduction of an Old Lithograph Depicts the Testing of the First Reaper in the Field Near Steele's Tavern, Virginia.

for the growth of great cities with their steel mills and factories, and it makes clear how we, in the United States, have become the best-fed nation in the world."

Some Early Implement History

Taking a quick look back into farming history we see practically no development or improvement in the tools of agriculture from the dawn of civilization up to the year 1831. The primitive sickle had been given a two-handed handle, it is true, and had blossomed out under Yankee inventiveness into the familiar cradle. With this implement of the harvest field, a strong man, if trained up to it, could cut two acres of grain a day. A second man could gather up and bind this grain into bundles.

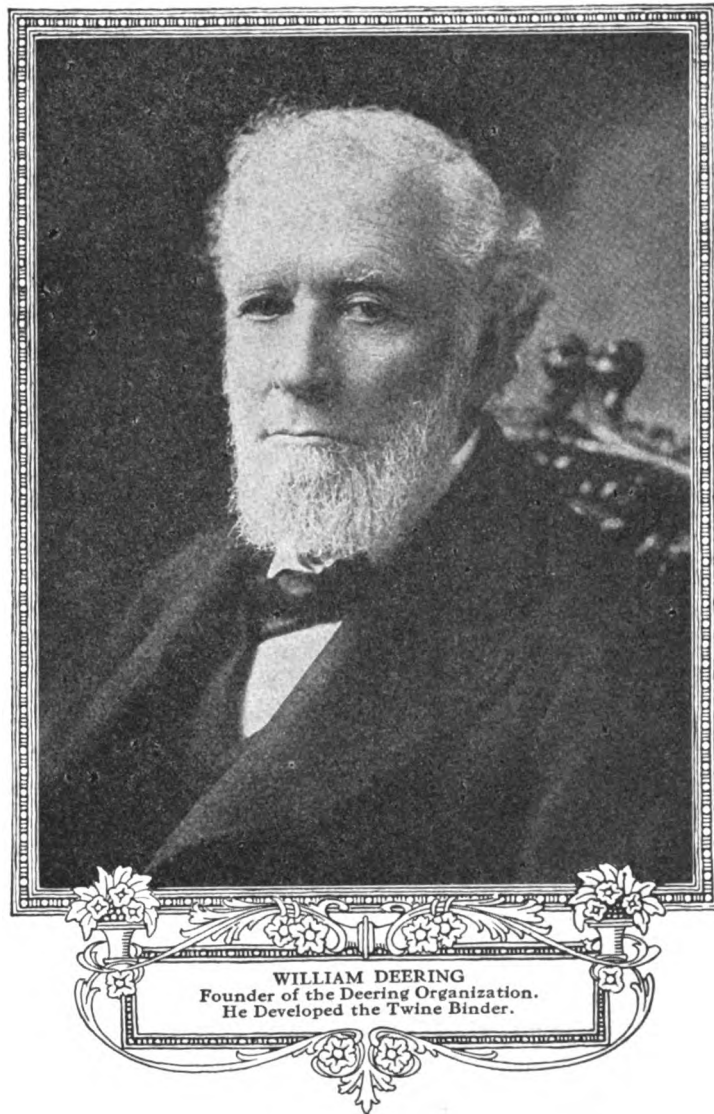
It was a slow and laborious process. Almost the entire population of the nation had to work in the harvest field—or else some would have to go hungry.

Harvesting is "the neck of the bottle" in grain farming. Often nature permits less than ten days' time for the harvest. What is not gathered in during those few days goes to waste. And, in the old days, before the coming of the reaper, often, try as they would, they couldn't save the crop. Hogs and cattle turned into the over-ripe wheat fields was no uncommon sight in those days.

And then, in 1831, came Cyrus Hall McCormick with his epoch-making invention. His father had worked for years on the problem of a machine to cut grain, but could not master it. The boy had grown up in that atmosphere, and where the father had failed, the son succeeded. There, in the backwoods of Virginia, in the little farm blacksmith shop he hammered out his first machine.

The thrilling events connected with his first demonstration of his new machine have been caught and handed down to us in picture form in an old lithograph now hanging in the Harvester offices in Chicago, and reproduced here.

This demonstration—which was to launch a new industry—has been described in vivid terms.



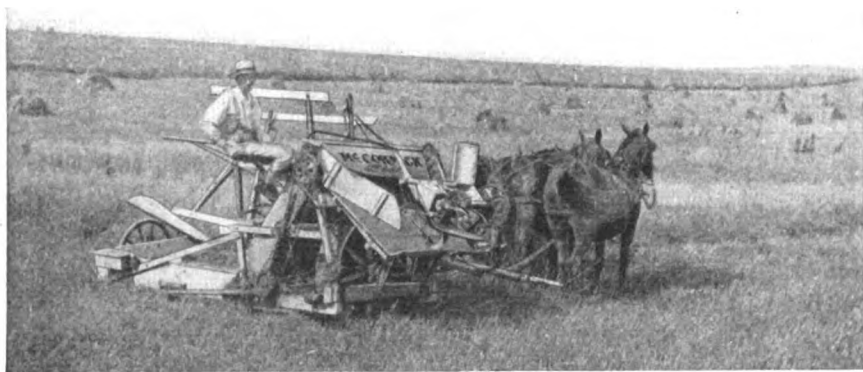
Tradition has it that the young inventor hitched his horses to the unwieldy machine and clattered out into a field of wheat nearby. Horses shied and pranced at the absurd object. Farmers, whose backs were bent and whose fingers were scarred from the harvest labor, gazed with contemptuous curiosity at the queer contraption which was expected to cut grain without hands.

A noisy crowd of laborers followed the reaper up and down the field with boisterous enmity; for here was an invention which threatened to deprive them of the right to work—the precious right to work sixteen hours a day for three cents an hour.

The field was hilly and the reaper worked badly. It slewed and jolted along, cutting the grain very irregularly. Seeing this, the owner of the field rushed up to McCormick and shouted: "Here! This won't do. Stop your horses! Your machine is rattling the heads off my wheat." "It's a humbug," bawled one of the laborers. "Give me the old cradle



Model of the McCormick Reaper of 1831 in Use. It required a boy to ride the horse, a man to rake off the cut grain and two others to bind the bundles. The capacity of this outfit was 12 acres per day.



Photograph of One of the First Wood Frame McCormick Twine Binders Built. It was this type of machine that was used in the pioneer work of winning the foreign markets.

yet, boys!" exclaimed a round-shouldered farmer.

Just then a fine-looking man rode up on horseback. The crowd made way as he came near, for they recognized him as the Honorable William Taylor—a conspicuous public man of that day.

"Pull down the fence and cross over into my field," he said to young McCormick. "I'll give you a fair chance to try your machine."

McCormick quickly accepted the offer, drove into Taylor's field, which was not as hilly, and cut the grain successfully for four or five hours. Altho the United States had been established more than fifty years before, this was the first grain that had ever been successfully cut by machinery.

Labor-Saving Tools Ushered In

McCormick's reaper was the first working out of a practical idea for cutting down hard work on the farm, at the same time increasing the farmer's ability to

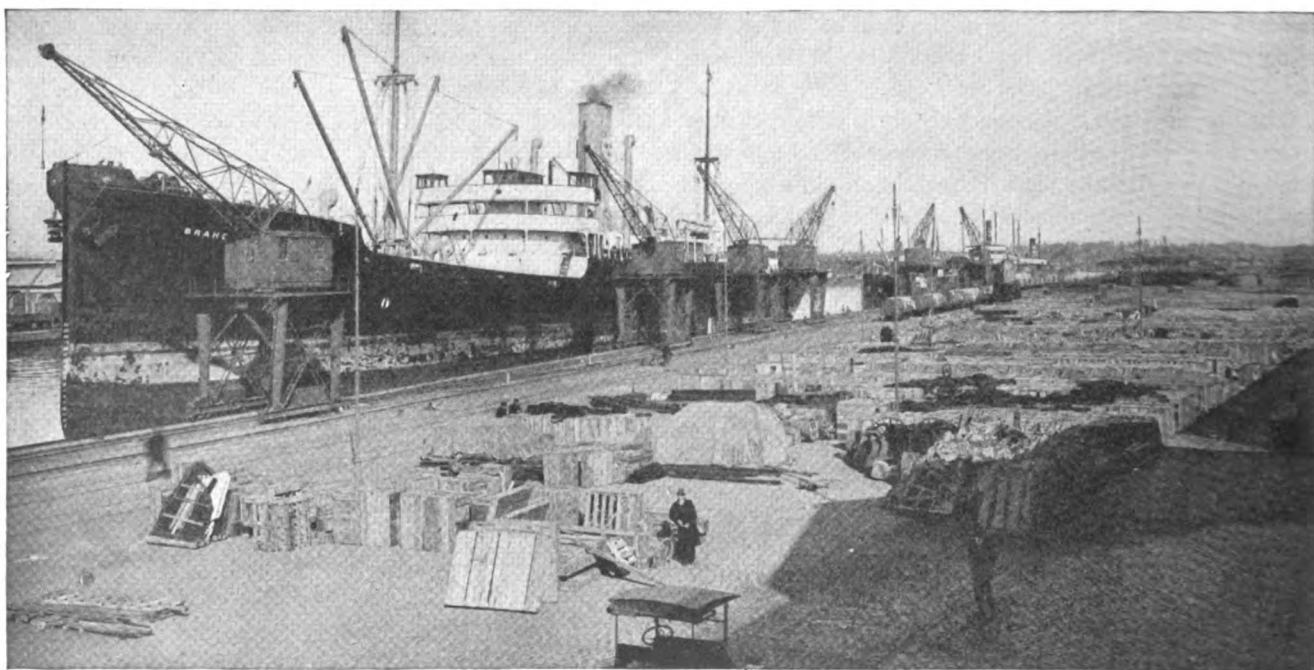
raise and harvest bigger crops. It performed as much work as six hand laborers in the harvest fields.

But the invention of the reaper was one thing. To get the people to believe in it, to buy it and to use it, was another thing. In this day and age it would be almost impossible to even imagine the hardships which the pioneer farm implement manufacturers were obliged to face when promoting their early inventions. What would we think of a race of people who objected to the use of steel plows because they believed the steel would poison the soil? And yet that happened in the early days

of the nineteenth century, and right here in the United States.

McCormick invented the reaper in 1831. It was ten years later before he sold one. Ten years of battling against prejudice, and of trying to finance a factory. Ten years of opposition that would beat down most men. But look at the picture of Cyrus Hall McCormick. That is not the face of a meek dreamer, but the face of a fighter, a man who fought for half a century, who never gave up until his death, in 1884, and then he left behind him one of the largest harvesting machine plants in the world.

The reaper opened the door to an era of fast working, time and labor-saving equipment: an era which is now in full swing. The twine self-binder, eliminating two men who rode on the platform of the harvester in 1870, came in the late seventies, and further lengthened the distance between production and the demands for food. William Deering, one of the Harvester Com-



A Ship Load of McCormick-Deering Implements Being Unloaded at the Docks of a Baltic Port. The farmers in foreign countries are getting to be large users of modern farm machines.



Primitive Homemade Harrow of Northeastern Europe, Made by Trimming the Branches Off One Side of Small Pine Trees. This is the type of primitive implements that American farm machinery is replacing.

pany pioneers and the founder of the well-known company which later became a part of the Harvester organization, built twine binders for the harvest of 1880, followed next year by McCormick. Deering searched the country for a suitable binder twine, and finally made arrangements with a Philadelphia manufacturer to spin twine especially for him, thus leading the way for many others to enter the field of twine manufacture.

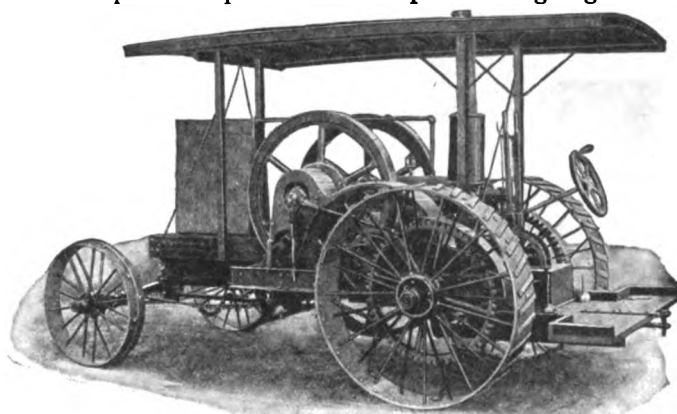
The improved machines which came in the wake of the reaper are almost too numerous to mention. The well-known P. & O. plows date from 1842, the Weber wagon 1845, Hoosier grain drills 1856, the Keystone corn sheller 1865, Keystone hay loader 1872, Chattanooga plow 1893, and huskers and shredders 1903. Without machines such as have been mentioned capable of the quantity production now necessary to meet the world's demand for food, starvation would face the cities and industry would perish.

This is but half the story. American farming now faces the dawn of a new day—the substitution of mechanical power for animal muscles.

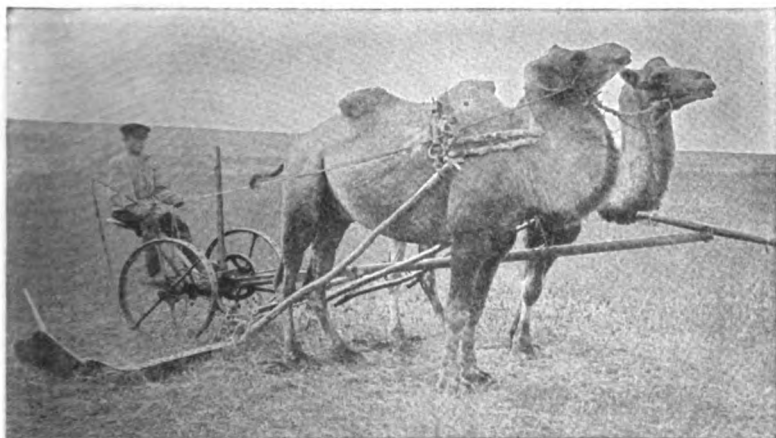
The power farming idea has made such rapid

progress in the past five years that we little realize that it started almost thirty years ago. Some of the more adventurous spirits in those early years attempted to apply steam power to plowing, but without success. Foaming boilers, leaky flues, fuel and help troubles induced some to remove the steam boiler from its truck and install in its place an internal combustion motor, which in the early nineties had jumped ahead in great popularity. These early tractors were naturally crude. Many were either back yard or blacksmith shop affairs, but they are of interest because in them do we find the beginning of the power farming idea as we know it today. The Harvester Company early realized the importance of this new idea and took an active part in developing it. No attempt was made to convert the steam tractor into an internal combustion one, but

rather the effort was to design an entirely new type of tractor, one that would actually meet the farmer's various power requirements. Experimenting began at



Thousands of Tractors Now Advance Farming Operations and Imagination Has to Help in Getting Back to the Day When a Tractor on a Farm Was a Curiosity in the Countryside. That's what this pioneer of 1907 was in those days when designers wanted to plow the earth in one trip across. Today's tractor goes in for nearly every horse job on the farm and many others and pays its way by being busy at something every day.

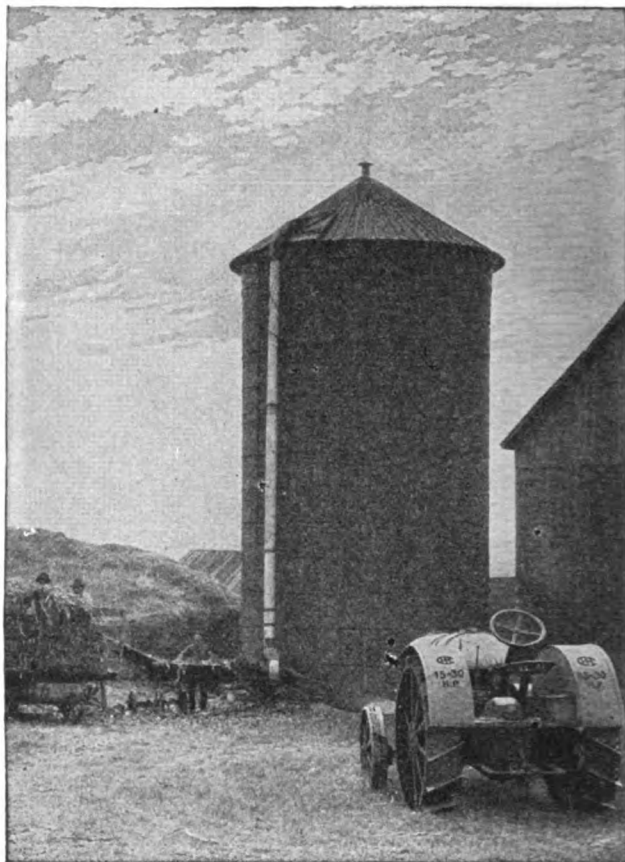


The International Harvester Company Have Gone Into the Far Corners of the World to Teach the Use of Labor-Saving Farm Machinery. This mowing machine in Siberia is pulled by Dromedaries, which are sometimes used in that country.

the Rock Falls Works at Sterling, Ill., in 1905. During the same year the Company opened negotiations with the Ohio Manufacturing Company for the installation of I H C engines on a specially designed and patented friction drive truck. Fifteen of these tractors were built immediately and marketed in 1906. Their success was almost instantaneous. Several hundred were made during the next year. By 1907 the demand had increased to that point where the Company arranged to manufacture additional quantities at Akron. Year by year the demand mounted, the design ever keeping pace with the best thought in the industry, until today two large factories are devoted almost exclusively to tractor manufacture.



During Its Spare Time, When Not Busy in the Field, the Tractor Saws Up Logs. The Titan 10-20 Tractor is an excellent power plant for making lumber.



The Farmer Who Has a Good Tractor and Ensilage Cutter Can Fill His Own Silos at Just the Right Time and Can Also Make a Nice Profit Filling Silos for His Neighbors.



Filling the Silo With a McCormick-Deering Husker and Silo Filler

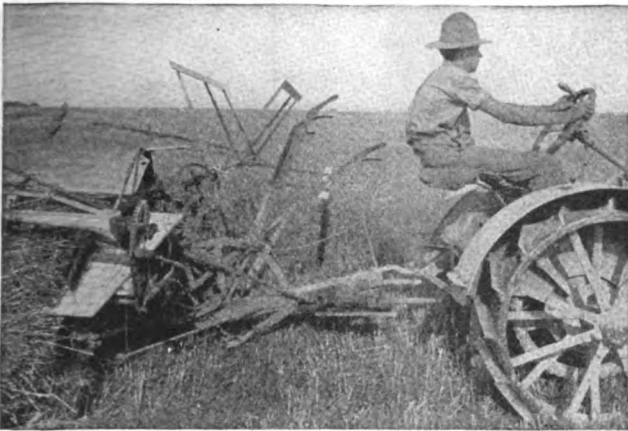


The New McCormick 15-30 Gear Drive Tractor Pulling Two Binders. The first binder is the new 10-foot power drive machine, the very latest improvement in harvesting machine construction. All the binder mechanism is operated directly by the power from the tractor engine thru a power take-off attachment.

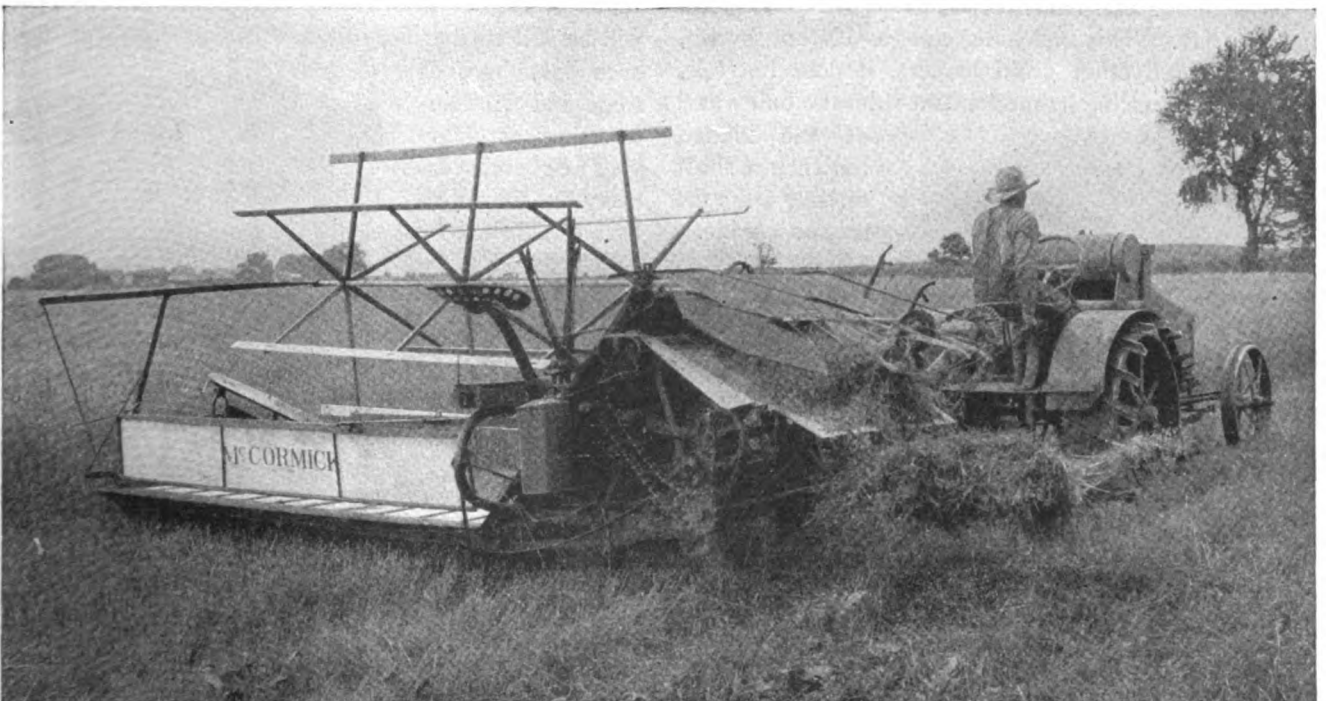
In motor trucks as long ago as 1905 Harvester engineers were at work to design a truck especially for the farmer, and for many years the company manufac-

tured the high wheel type. In more recent years, since so many of the rural highways have been improved, the demand for the high wheel trucks growing less as a result, the company has developed a complete line of motor trucks which has had a part in completing the line of farm operating equipment available to the farmer, all planned to cut down labor costs.

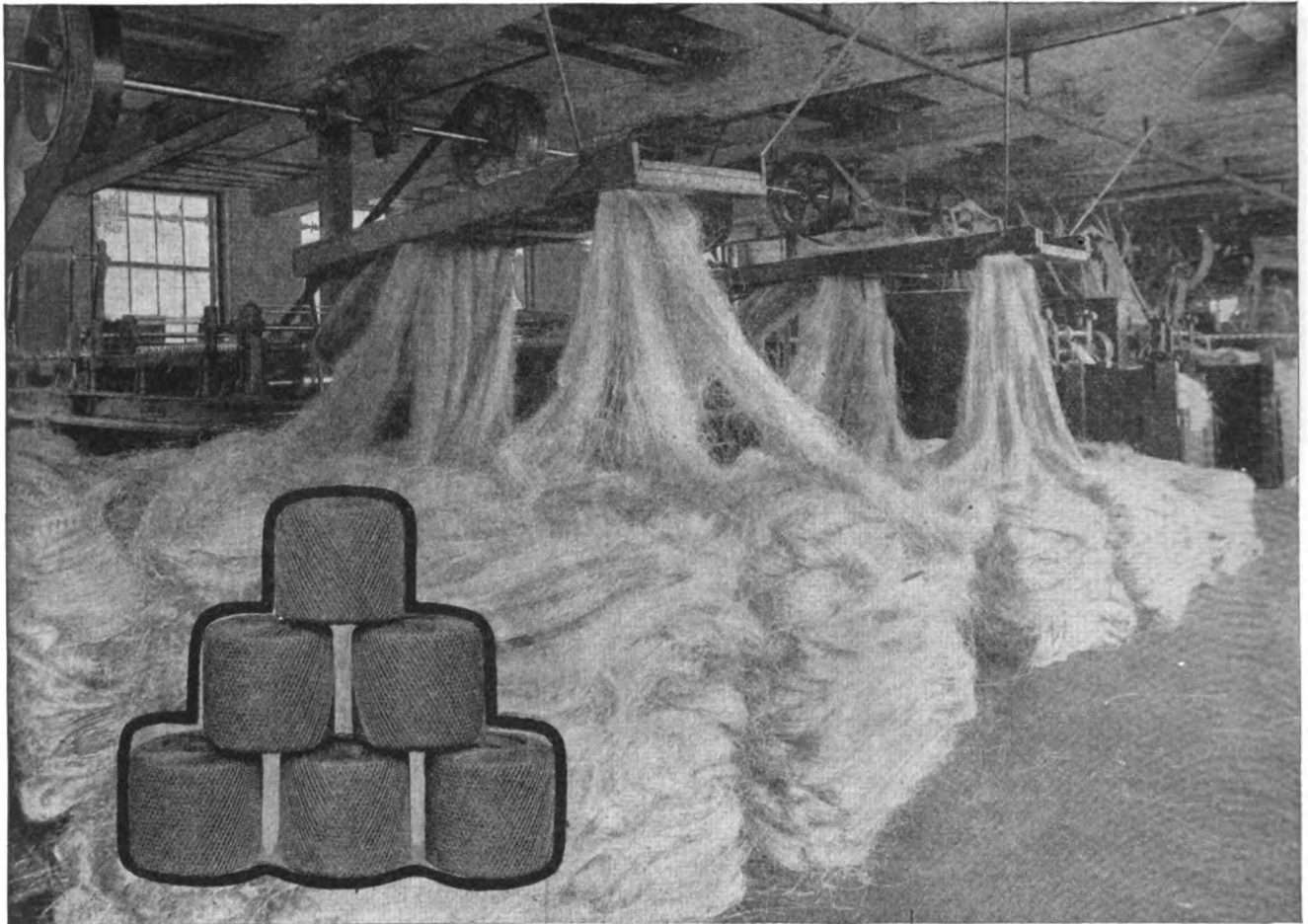
During the eighteen years since the Harvester Company first started its tractor development, it has devoted itself unceasingly to developing machines especially adapted to this new power. Among these machines is the harvester-thresher, or small combine, one of the greatest boons ever offered to the western farmer in the way of labor-saving machines. In the field of the small combine the Harvester Company was the pioneer. It has adapted the principles of the big combine to the average grain grower in the west and southwest. This machine goes thru the standing grain, harvesting, threshing, cleaning and bagging or loading the grain into wagons all in one operation. For use in other wheat growing sections where the harvester-thresher is not adapt-



Close-up view of the McCormick 10-ft. Power Driven Binder. The binder is operated by a tumbling rod from the tractor and so runs at an even speed regardless of the rate at which the outfit may be traveling.



The New McCormick 10-ft. Power Binder and an International 8-16 Tractor Harvesting 35 Acres a Day Near Kingston, Ill. The picture shows the operator just ready to trip the bundle carrier.



Good Binder Twine Is Essential to Good Work in the Harvest Fields, so the International Harvester Company Makes Its Own Twine. Here we see the sisal fiber starting thru the twine making machines. The twine is now packed, six balls to the bale, containing the same number of feet of twine as the old ten-ball bale. The new ball is very little larger but is more compactly wound.

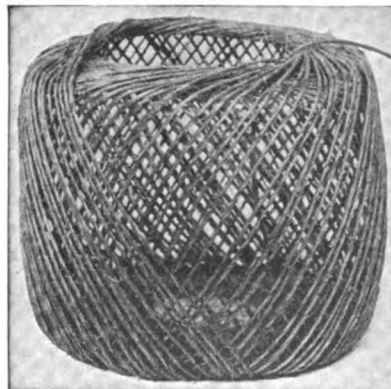
able owing to climatic conditions, the company has perfected a power-driven grain binder, which makes it possible for one man to harvest 35 acres of grain in one day. This machine cuts a 10-foot swath, and unlike all other grain binders, it does not take power for operating its mechanism from the bull wheel

of the binder, but thru a shaft directly from the tractor engine.

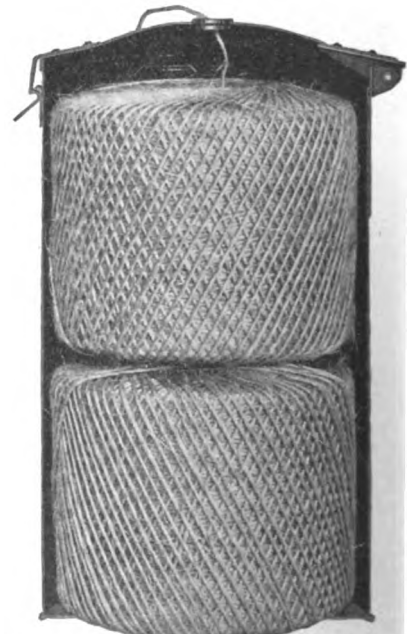
These are but two machines which indicate the trend in present farm machine development, but they augur well for the future. Farm production costs will be still further reduced and life on the farm made even less burdensome and more interesting as Harvester engineers carry out the policy first established by



This Shows the Patented Reinforcing Cover of the New "Big Ball." After the center has been used out, the patented cover stands firm and free from collapsing. Saves all the twine.



The Patented Cover Does Not Collapse Nor Become Tangled Even After the Twine in the Ball Has Been Used Up.



Two Big Balls Fit Any Twine Can Snugly, and They Are Not Jostled Around.



An American Hay Rake in India.

McCormick in 1831—a never-ceasing search for improvement.

Perhaps nowhere is this never-ceasing search for improvement better illustrated than in the experience of the Harvester Company in manufacturing binder twine. Harvester twine has been used the world around and has long been recognized as of unsurpassed quality. Better twine could not be made. The restless ambition of improvement, shut out in the direction of twine quality, then turned its attention to the method of winding. A new ball was devised, called the "big ball," which many farmers of this country will use for the first time this year. The new winding process increases the footage per ball by $66\frac{2}{3}$ per cent. In other words, six of the big balls do the work of ten of the old-style balls, yet two of the big balls fit in the twine can just the same as two of the old style. The use of the new ball eliminates two-fifths of the stops in the field for replenishing twine. The most interesting feature of this ball is the new patented reinforced cover. After the center has been used out, the patented cover stands firm in the twine can and prevents collaps-

ing, so that no twine is wasted. This patented cover winding is found only on Harvester Company brands.

Yankee Farm Tools Around the World

The conquest of foreign markets by American farm implements is a most interesting chapter in commercial history. "Yankee inventiveness" is now recognized the world around as standing for farm tools and farming methods that save labor and increase production.

In 1851 Albert Edward, prince consort of Queen Victoria, staged a World's Fair in London. To this fair there were sent two American reapers, one made by McCormick and the other by Hussey. The success that attended this exhibition, at which McCormick's reaper was awarded the Grand Prize, made the American reaper popular with the titled landowners of Europe. The London "Times" said, "the McCormick reaper is worth the whole cost of the exposition." In the ten years that followed several hundred thou-



McCormick Binder on the Argentine Pampas.

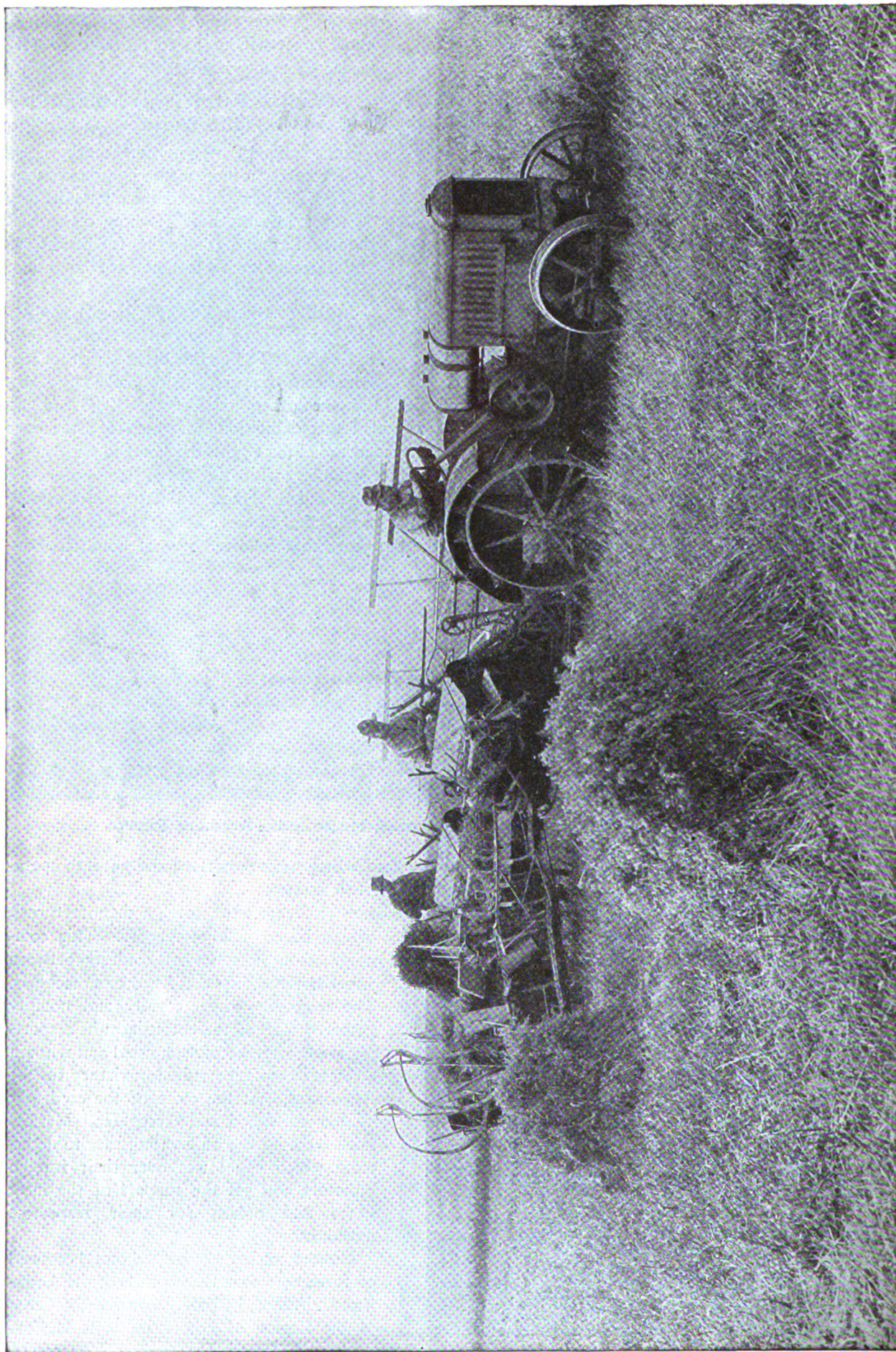
sand dollars' worth were purchased and put into operation on English estates.

This success challenged the foreign manufacturers, several of whom began making reapers. This competition brought about a series of contests between American machines and European machines. The trials, at which royalty and nobility gathered with all the enthusiasm of a sporting event, were keenly contested and without a single exception resulted in victory for the Americans. At the close of the civil war Walter A. Wood and Cyrus Hall McCormick were having an exciting race to determine which could win over their foreign imitators and get the support of the most kings and nobles for their respective machines.

Honors such as were seldom bestowed on foreigners were the rewards of the Americans. France, in 1867, bestowed the Cross of the Legion of Honor on both McCormick and Wood for their achievements. Later Austria presented both of them with



In Picturesque Italy, Near Milan, Where Snow-White Oxen Pull Deering Mowers with Reaping Attachments.



Two McCormick Binders Equipped with Automatic Bundle Shockers Pulled by McCormick-Deering Gear Drive Tractor on the Harvester Farm Near Hinsdale, Ill.



ALEXANDER LEGGE

President of the International Harvester Company, Left the Farm 31 Years Ago to Sell and Adjust Harvesting Machinery. His advancement from the plow to the presidency of the world's largest farm implement organization thru hard work is an inspiration to every farm boy.

the Imperial Cross. The French Academy of Science elected McCormick one of its members, declaring that he had "done more for agriculture than any other living man."

These competitions continued for 30 years, and the details of them are worth recording, as they proved conclusively to the Europeans that while Americans had been the original inventors of the machines they had not rested on their laurels, but were keeping well ahead of their foreign rivals.

A French reaper, a British reaper, and an American reaper were in a three-cornered competition near Paris in 1879. Each was to cut a field of equal size. The French reaper set the pace and finished in 72 minutes. The English reaper did it in 66 minutes, beating by 6 minutes the time of the French machine. Then the American reaper astonished the onlookers by cutting its section in 22 minutes, just a third of the time required by the British machine. It is recorded that after this achievement the "judges were inclined to doubt either their watches or their eyesight."

In 1880 Cyrus H. McCormick, oldest son of the inventor, then a youth of 21, took a machine to Europe to compete in a tournament on an English estate. The ship that carried the machine was wrecked off the Irish coast, and when the reaper was finally gotten ashore it had lost its paint and was rusty and dingy. McCormick did not have time to repaint the woodwork or polish the metal parts. But with a sublime faith in the ability of his machine to vanquish its competitors, he decided to capitalize its appearance and as it was assembled made it look even worse by scraping off what was left of the paint. When the reaper made its appearance on the field it was a sorry looking affair. Two of the smallest, scrubbiest horses had been secured to pull it. The foreign machines were new, bright with paint and were drawn by pairs of large, handsome Norman horses.

On the field the McCormick machine was met by a shout of ridicule, which was speedily turned into cheers, as the American outdistanced its rivals and won the gold medal. This feat firmly established the American machine in the minds of the British farmers

as far and away the best, and gave it a prestige thruout Europe that has never been lost.

What American farming machinery, the grain binder especially, has meant to the people of France is shown best by an incident that happened when Seth Low, of New York, was visiting President Loubet. The two were walking together over the President's estate. A reaper was working in a wheat field, and as the two men came near it, President Loubet said:

"Do you see that machine? I bought it from an American company in 1870, and I have used it every harvest since then. I have four of the machines now, and I want to say to you that they are the most useful articles that come to us from the United States. I am stating no more than simple truth when I tell you that without American harvesters, France would starve."

Firmly established in the European countries, the American harvester gradually found its way into all the countries of the world. This did not come about without work—hard work. Specially trained Americans sent out by the American manufacturers were the missionaries who not only demonstrated the abilities of the machines, but taught the peoples of the countries better methods of crop production and harvesting. Today there is no idle season for American harvesters. Somewhere on the earth each

month it is a harvest month, and McCormick-Deering harvesters are doing the work. In January they are reaping the fields of Argentina and Australia; in February those of Upper Egypt; March is harvest time in East India; fields ripen in April in Mexico; China harvests in May; Spain in June; July, August and September are the harvest months in the United States and

Canada; then follow Sweden in September, Norway in October, South Africa in November and Burma in December.

To meet the needs of the countries of all the world, the Harvester Company makes machines best adapted to the various conditions found in different sections. For instance, in Denmark, moss grows under the grass, so that the knives must cut high; in Holland the grass is short, and the machines are designed to cut it as close as a lawnmower would cut. Light harvesters are used in many states of this country, while in the rough country of Argentina such machines would be racked to pieces in a short time. Russia has small horses, France has large ones; oxen are used in

India, while camels are used in southern Siberia. Machines adapted to all of these animals are made.

Because of these demands for different machines and different tools and to meet the national needs, Harvester plants have been established in many foreign countries. Here, Americans, taught their trades and their business in American factories, train native workmen in western ways, and where necessary continue to direct the operations. It is a notable fact that at the time the Soviet government nationalized the industries of Russia, the Harvester plant was not molested. This probably was due to the fact that American harvesters had been the means of developing Russia into the immense grain producing country it was previous to the war and which it is bound to be again in the future.

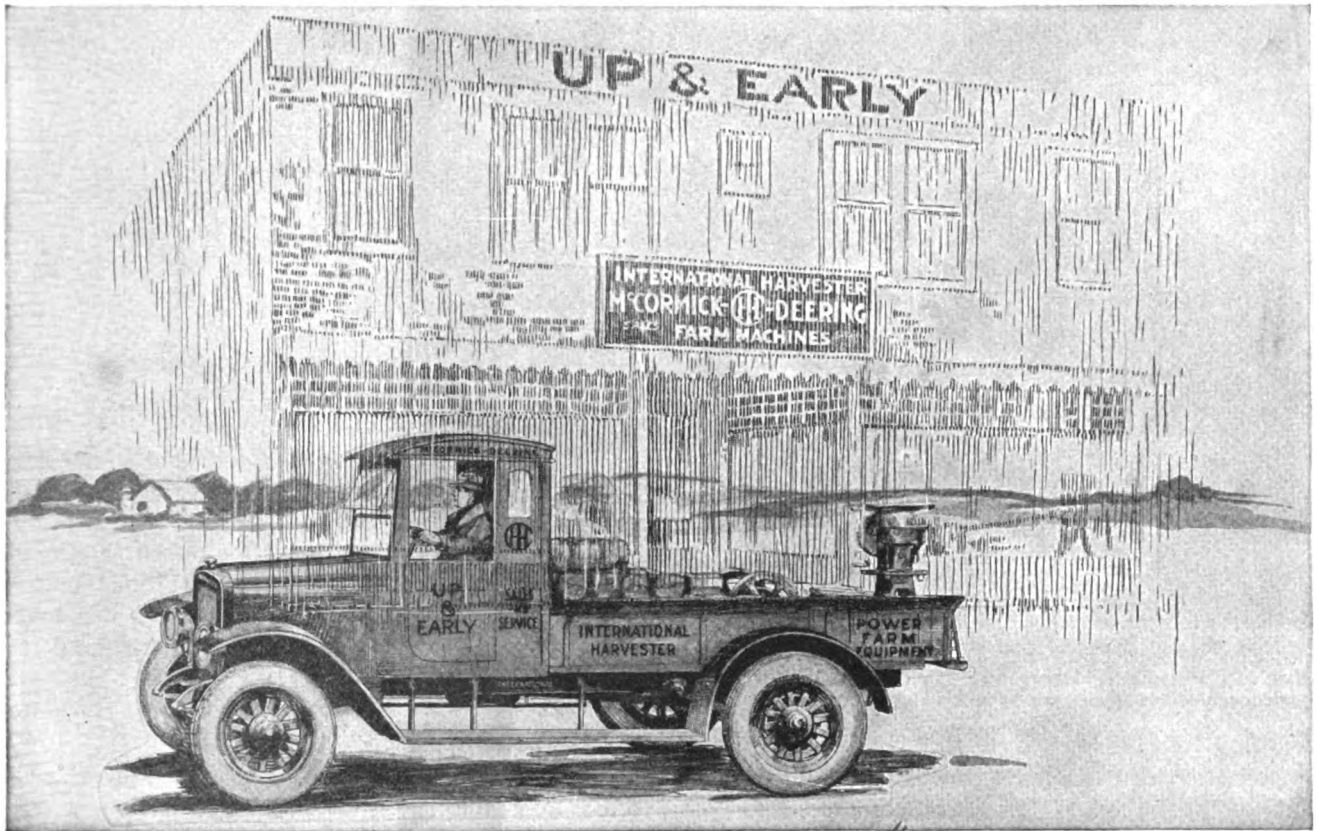
The winning of the agricultural world by American farm machinery has not been an easy accomplishment. Age-old customs have been destroyed with difficulty; cheap and plentiful labor has made it difficult to convince the people of many nations that machinery really accomplishes the same results at less cost than even when the work was done by slaves. During the Chicago World's Fair a group of 47 foreign commissioners were taken to a North Dakota farm where they saw a wheat field nearly 100



McCormick-Deering Products Have Gone All Around the World. This Japanese poster explains the merits of the gas engine.



Titan Tractor Rolling Down Scrub Brush in Australia, Preparatory to Plowing. It is in heavy work of this kind that the unique advantage of mechanical power is brought out.



Visualizing "Up and Early" Service Which the McCormick-Deering Dealers Are Giving Farmers Thru the Use of Their Red Baby Speed Trucks. The dealer is now able to keep in close touch with his Customers and supply their needs.

square miles in size. Three hundred self-binders were at work and it was shown that the wheat was being harvested at a cost of less than a cent a bushel.

It is England's boast that "the sun never sets on the British flag." The sun never sets on American agricultural machinery; it is making it possible for all the nations of the earth to produce food in abundance and is carrying to those nations a knowledge of what American genius, enterprise and industry are doing for humanity.

Service for Present-Day Farmers

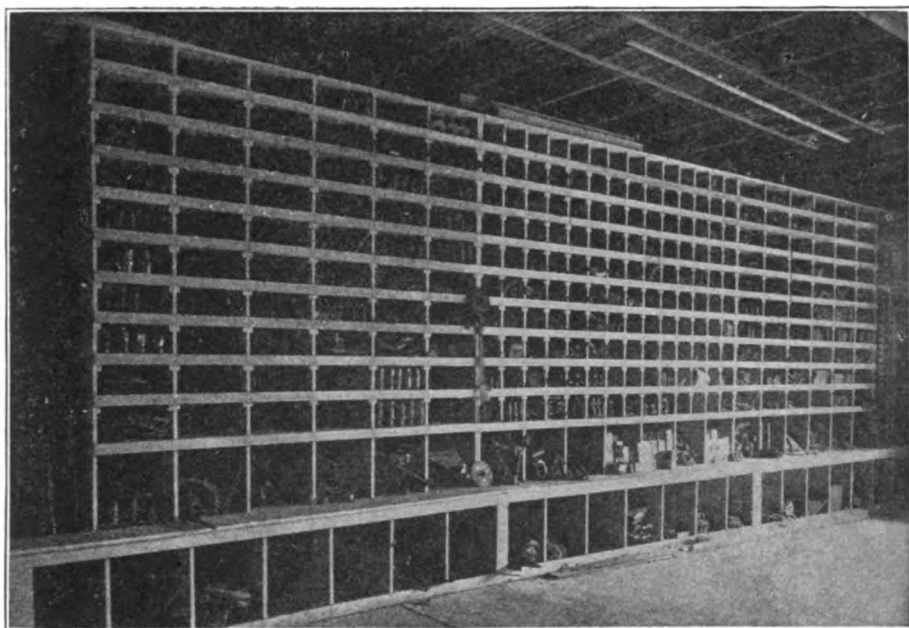
The cornerstone of our American civilization today, just as in generations past, is broad-gauge agriculture—not man-with-the-hoe drudgery, but up-to-date farming with power, machines and modern methods. These hold famine away. Without these, all America would come tumbling back to the soil for daily bread. In 1831, when Cyrus Hall McCormick built his first reaper on that stone anvil in Virginia, toilers in the field could feed only themselves. Today six million farms sustain more than a hundred million souls in this land, and many millions overseas.

It is a record to be proud of that

the Harvester organization has devoted nearly a century to the improvement of farming and farm life. Its work has been the invention, development, manufacture and distribution of time and labor-saving machines—pioneer development that has created production and



The Dealer's Store Is the Center for Information About Better Farming Methods and Improved Farm Implements. Help yourself to any of these attractive catalogs and booklets displayed by every McCormick-Deering Dealer.



This McCormick-Deering Dealer Has a Repair Parts Department that Reminds You of a Postoffice. Everything is clean and neat and in its place. Such order is a guarantee of accurate service when the farmer needs a new part in a hurry.

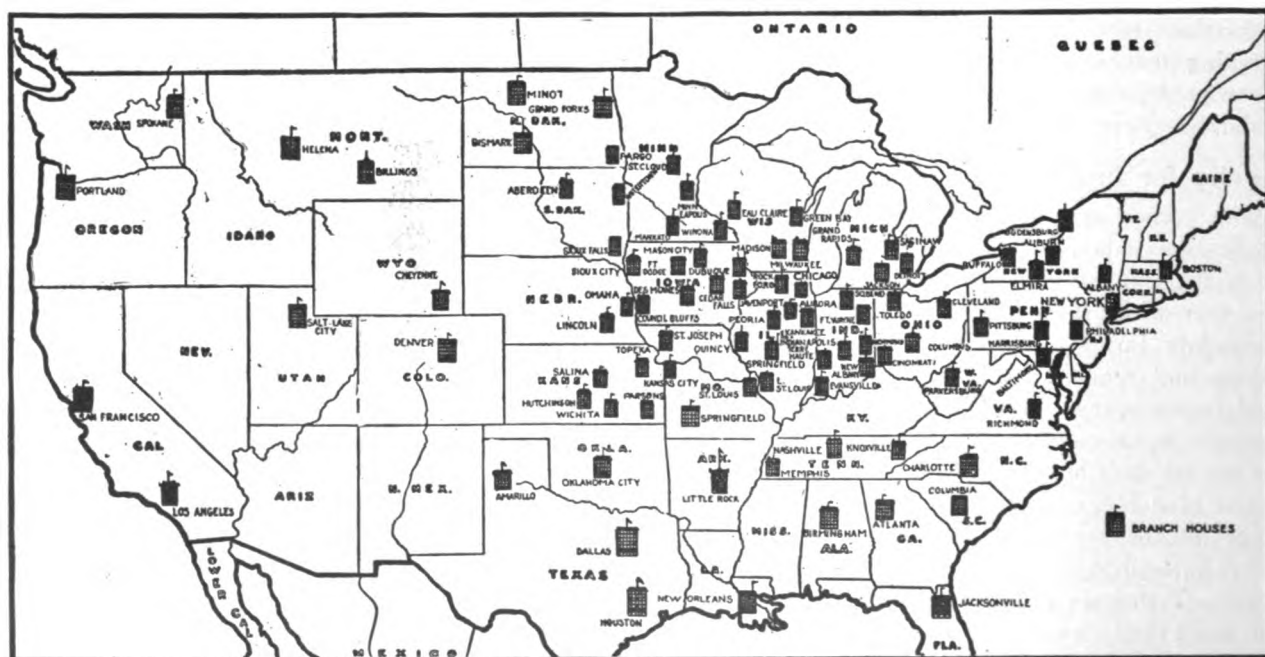
wealth. Today its service activities are handled thru an organization that has been growing in value and usefulness for the nation during many decades.

About eighty years ago (1842), marked the beginning of McCormick's direct contact with the farmer in a business way. In that year he made his first regular sales. The purchasers knew him, and it was easy to keep track of the machines. Sales increased so that it was necessary to send out a representative, the first general agent, in 1844, to be closer to the gradually growing number of customers. At that early date service was considered essential and there was the purpose of keeping men and stocks close enough

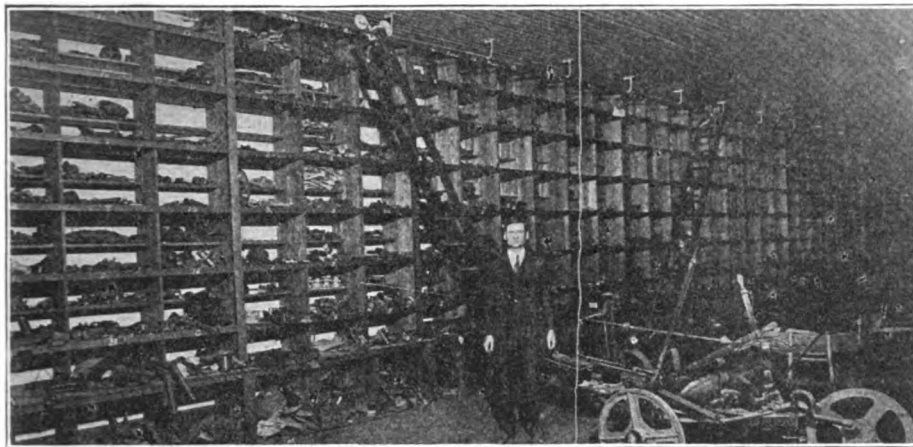
Company's customers are to be accorded.

Today 17,000 McCormick-Deering dealers, scattered over the land, carry this company's service direct to the individual farms. Here come the calls for the millions of machines, for tractors and automotive equipment, for repairs, for instant aid in emergency. Here the swift red International Speed Trucks, popularly known in thousands of communities as "Red Babies," live on the roads, helping the dealers to serve Agriculture.

Ninety-three International branch houses, strategically located as shown on the map on this page, supply 17,000 dealers and serve as links between them and



Map Showing Location of the 93 Branch Houses of the Harvester Company in the United States, Supplying McCormick-Deering Machines, Repairs and Service to the 17,000 Dealers Who in Turn Take Care of the Needs of the Farmers in Their Respective Sections.



The Stock Bins of the Harvester Branch Houses Are Kept Filled All of the Time. Parts for over 3,000 different models are available altho many models have been out of manufacture for years.

the International factories. These are the vital centers in the network of International service.

It is the working belief of the McCormicks and their associates that every purchaser of a farm machine is entitled to two kinds of service—service from the machine itself, and service from the organization back of it. In the implement industry today “service” covers probably a wider range of possible co-operation between customer and dealer than in any other business. It may mean almost anything, from mere claims to the actual rendering of real service.

The Harvester company practices its belief that no machine should be placed on the market until it will do the work for which it was designed, and do it long enough to show a profit on the investment represented by its purchase and use. This is one of service, and the only kind that will insure the farmer satisfaction from the machine itself.

Years ago, when farming was done with a few simple tools, most of which were made by the farmer himself, the repair problem was easily solved. When a part became broken or worn he made a new one himself. Today the manufacture of farm machines is an industry that is highly specialized and equipped to solve readily all problems of repair and adjustment. Machines are being made in an ever widening variety, some of which are extremely complicated. To the uninformed the number of distinct parts in a modern grain binder for instance, or farm tractor, is almost beyond comprehension.

When one of these parts becomes broken by accident or fails to function properly thru natural wear, it must be replaced. Every hour lost in getting the new part into the

hands of the user represents a distinct money loss to the farmer. It may mean only the loss due to idle equipment and time, or, as is often the case, a partial crop loss as well. The only kind of service worthy of the name “service” is the kind that places the repair parts close to where they may be needed. Parts kept only at the factory or at a select few of the more important railway centers is not sufficient.

Harvester service brings these parts as near to the very door of the farmer’s home as it is possible to do. Thousands of dol-

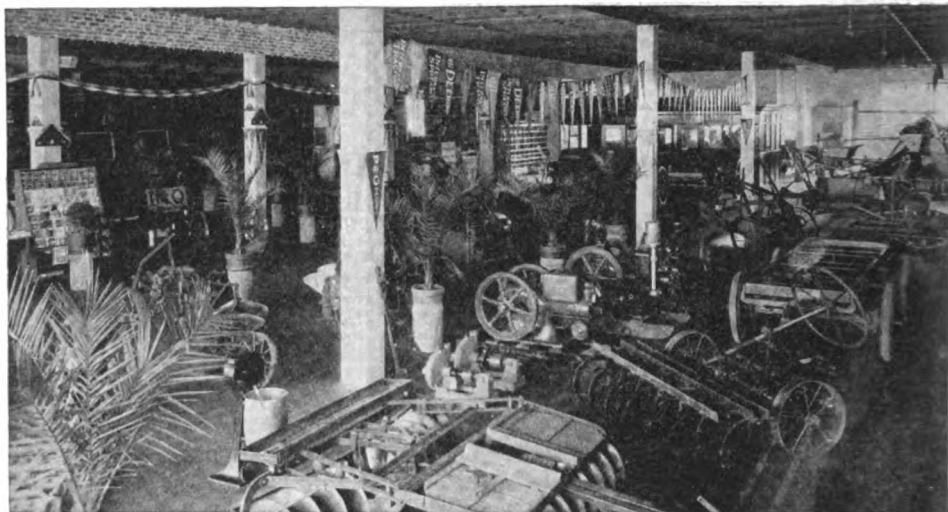
lars worth of repair parts are concentrated at each of the direct company branches. Each branch serves as the repair center for the McCormick-Deering dealers in its territory.

Not only are genuine repair parts supplied for International machines of current manufacture, but repairs are supplied for old models, the manufacture of which was long ago discontinued. In some instances it has been necessary to get out the original pattern and fashion a new piece, for some extremely old machine. So confident have American farmers become of the dependability of International repair service that thousands of repairs orders are received each season to fit up machines that have not been built for many years. The surprising part of it is, they



Photograph of Some of the Instructive Hand Books on Tractors, Tractor Implements and Modern Ideas in Farming Prepared and Distributed by the Harvester Organization.

Display Room of a McCormick-Deering Dealer. Once the Owner of This Magnificent Display Was Serving Pioneer Customers in a Blacksmith Shop. But a start was all he needed. Blacksmith shop ideas don't go here. He's abreast of the times and ahead of his customers. He's not complaining of losing business. More likely, customers volunteer orders just to have an excuse for tarrying in his vicinity.



do not ask whether or not these parts can be supplied, they order them expecting delivery—and they get them.

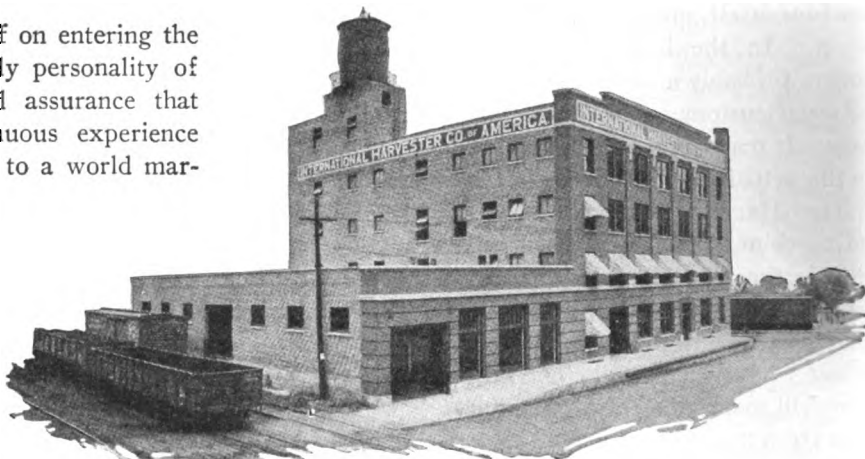
The Company Back of the Service

The thing that strikes you right off on entering the Harvester door is the strong friendly personality of the institution. You feel the solid assurance that comes from ninety years of continuous experience making and selling agricultural tools to a world market, yet there is no arrogance, no false viewpoint. In a kindly, helpful way the men of this great organization are working to better farm conditions. They take the broad view that only as farmers prosper can the company prosper.

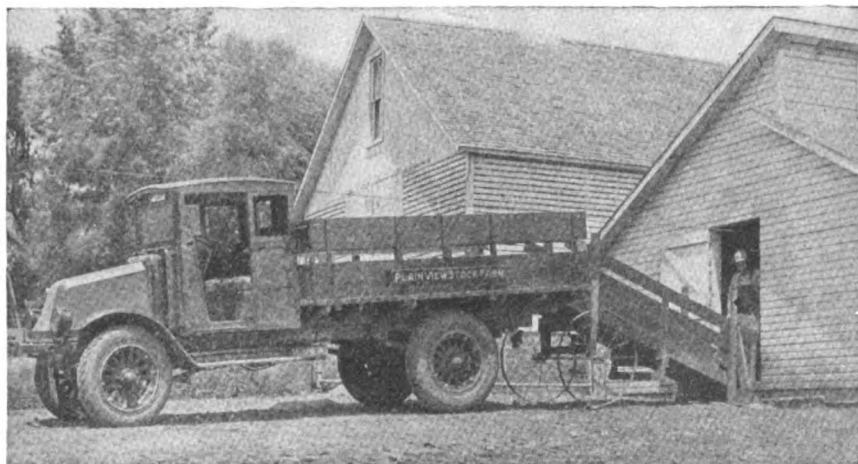
"A company of farmers—that's all we are. From the president down we are not only working with the farmers, but a great

many of us own and operate farms ourselves. We try to look at all things thru farmer eyes. It helps us to go straight on many questions."

This fact, voiced by a prominent official of the Har-



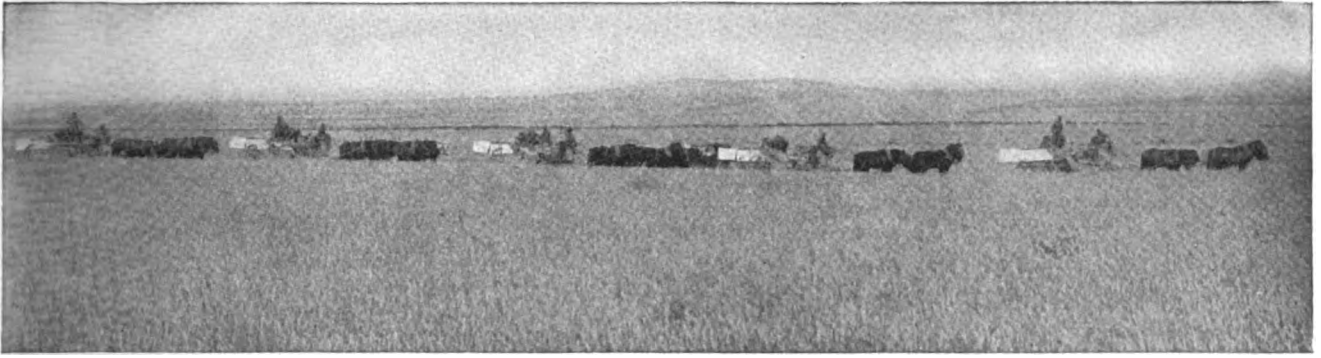
In Many Towns and Cities Harvester Company Branch Houses Inspire Confidence by Their Permanent, Pleasing Exteriors and Well-Organized Departments. The branch organization is a unit, self-directive and supreme in its territory, which the individuality in this building at Winona, Minn., suggests.



Loading Hogs in a Practical Way on an Iowa Stock Farm.



A Blackfoot Squaw Brought This Crude Tracing Into the Store of the Evans Mercantile Company, American Falls, Utah, with a Blind Confidence in the White Man's Ability to Read the Pictures. She got the sections, ledger plates, and can of oil, in two minutes, we are told. It takes this intelligent action at the other end of the service devised by the company to make it effective.



Machines That Cut and Thresh in One Operation. These Five McCormick-Deering Harvester-Threshers Are Working on a 6,000-Acre Farm Near Rexburg, Idaho.

vester Company, impressed the writer as the keynote of the policy of the organization, and perhaps, too, the reason for its success. It has kept this business

called for part, he gets it quickly from the branch house in the nearby city.

This is the Harvester Company, looked at from the dealer side; and many never stop to look back of that dealer to see the wonderful organization that makes such dealer service possible.

Standing back a little for the purpose of viewing this institution beyond its local limits, just what is the International Harvester Company? Where is its factory? What does it make? How does it market its product? To many people a concern of this kind is a hazy affair, a sort of intangible something that exists by a more or less mysterious process.

The International Harvester Company has many manufacturing plants, located in different cities of the United States, three in Canada

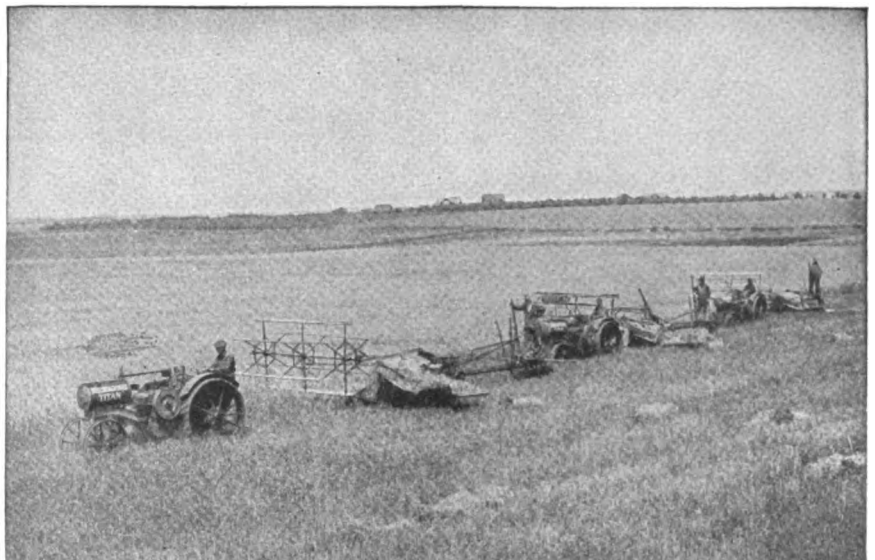
McCormick-Deering 15-30 Gear Drive Tractor Operating a McCormick-Deering Thresher.

in step with the advancing needs of agriculture.

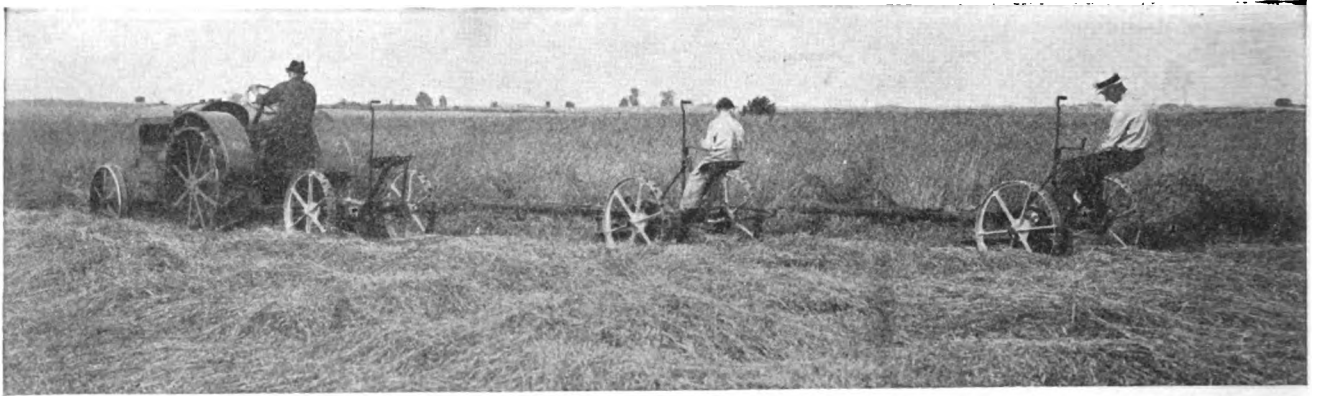
In traveling back and forth across the country calling on farm equipment dealers I have had many a friendly welcome from McCormick-Deering men. Their salesrooms and warerooms are centers of good farming influence, and the genial, tho businesslike, atmosphere of the place suggests real service being rendered.

The nearby dealer is, of course, the part of the Harvester organization that farmers know best. They see him and his place of business every week or so. They call him on the phone and ask for a repair part for an old implement that has been these many years no longer made, and they expect immediate service; *and they get it!*—for the McCormick-Deering dealer has it right there in his stock bin, or, if not, if it's a particularly rare, seldom

and four factories and three twine mills in Europe. In these plants is made nearly everything needed for the operation of a farm, and that farm may be any-



A Battery of Three Push Type Harvesters, in this Instance, However, Being Pulled by Tractors Instead of Pushed by Horses.



Ingenious Hitch of Three McCormick Mowers, Tractor-Pulled, on the Mooseheart Farm, Near Aurora, Ill. This outfit will cut 60 acres per day.

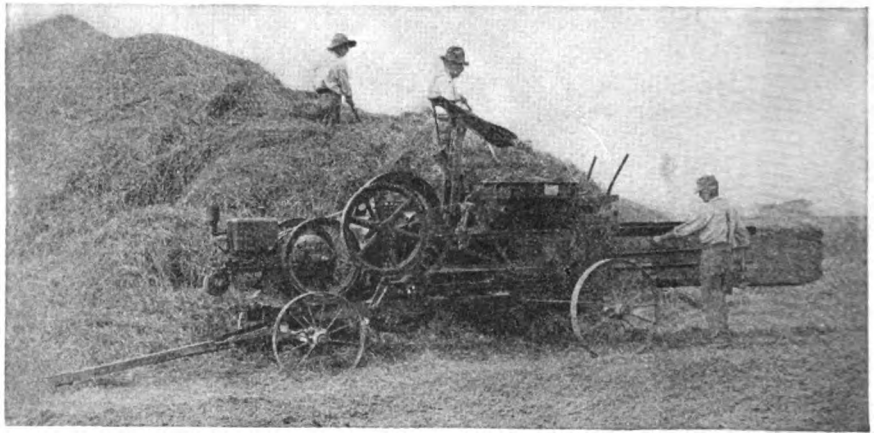
where in the whole world and not be very far from supply and service when they are needed.

In all these plants pervades the spirit fostered by those two great pioneers, McCormick and Deering. Always, everywhere, among Harvester men, is the desire to accomplish something better, something to make farming easier and more efficient. Just as the first McCormick built model after model of his reaper, improving and revising as he went on, just as Deering fought against every kind of disappointment and obstacle to develop a practical twine binder, so even now there exists in the organization the same spirit to improve and better agriculture. It is, in truth, a cherished Harvester tradition.

The farmer whose farm is equipped with McCormick-Deering machines has all the resources of the Harvester Company back of him, with the nearest branch house and his own local dealer to serve his wants.

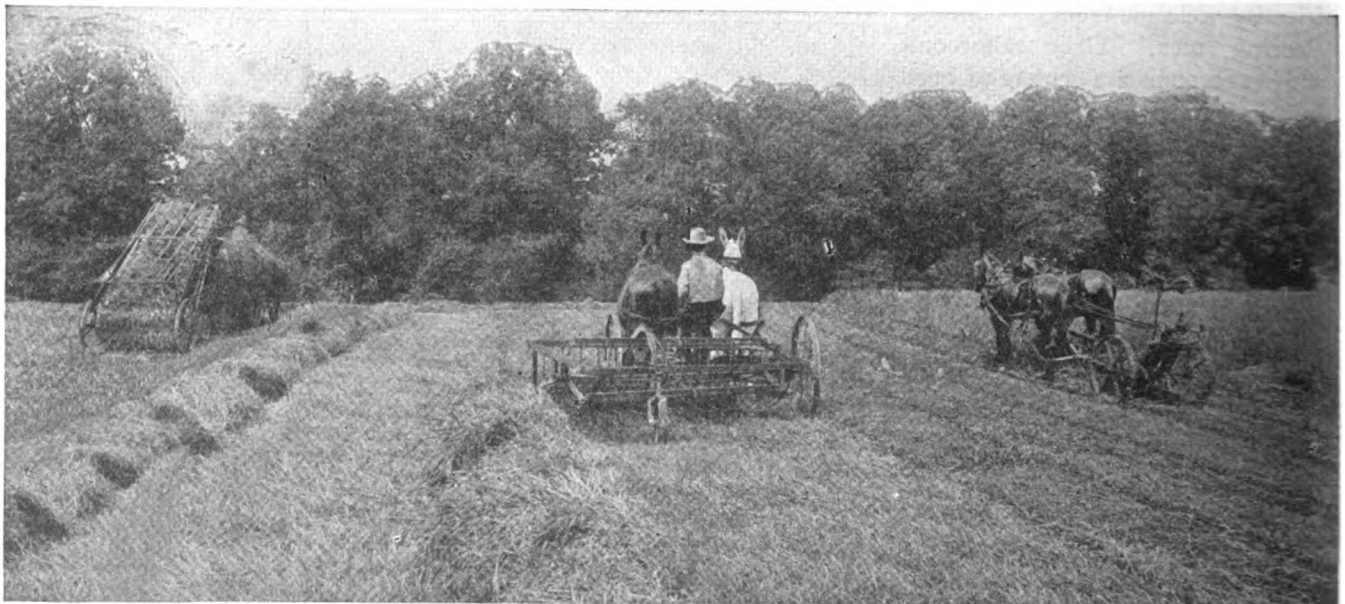
And there are ninety-three branch houses in the United States.

From Cyrus Hall McCormick's invention of the



Bale the Straw. There is a good market for it. Here we see an International hay press baling straw.

reaper 92 years ago, to the present line of McCormick-Deering farm machinery, is encompassed a greater advance multiplied a thousand times, than all the



Cutting, Raking and Loading Made Easy with McCormick-Deering Hay Machines.



The Combined Sweep Rake and Stacker Picks Up the Hay Brought to the Stack by the Sweep Rakes and Elevates. This saves time for the sweep rakes as they can dump their load and go back for another while the first is being stacked. It can also be used as a sweep rake to collect hay in the vicinity of the stack and elevate it.

inventions and all the improvements in all the tools of agriculture that the world has witnessed since the Creation!

The Demonstration Farms

Up in the Dakotas every farmer knows about the Harvester Company Demonstration Farms. In fact the entire Northwest has felt the effects of the practical farming lessons worked out and taught on these farms.

They are located at Grand Forks, North Dakota, and at Aberdeen, South Dakota. They were established several years ago for the purpose of helping to demonstrate the possibilities of diversifying the cropping systems in this region.



Here is the Modern Way to Replenish the Wood Pile. This McCormick-Deering engine will handle practically all of the small power jobs on the farm.

Nothing is attempted which would not be practical for the average farmer operating in the same community.

The Aberdeen Demonstration Farm is located in Brown County, South Dakota, two miles east of the city of Aberdeen, and contains 320 acres. When this farm was leased for demonstration purposes ten years ago, it was all prairie sod land, never having been plowed. Half of the land had been used for pasture for a number of years and hay was cut from the other field.

The handling of the Aberdeen farm differs somewhat from that of the Grand Forks Farm, in that the former is new land and the latter old land. Corn is followed by



Orchardists Have Learned the Value of Power Spray Rigs.



The Harvester Demonstration Farms Show the Farmers of the Dakotas and the Northwest Some New Wrinkles in Practical Farming. Here we see a farmers' club studying alfalfa on a visit to the Grand Forks Demonstration Farm.

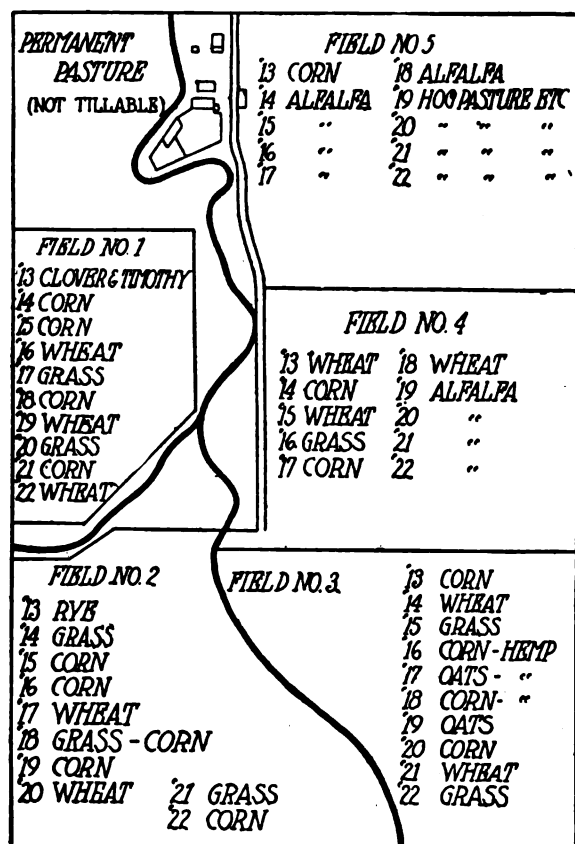
small grain in which alfalfa and sweet clover are seeded. This provides corn and hay for feeding cattle and reduces the plowing to one-third of the land each year. Improved seed is grown and distributed and the results of the work published from time to time, and used as the basis for lecturing at farmers' institutes, Chautauquas, newspaper articles, etc.

The southern farmer and his problems have not been overlooked either, in the Demonstration Farm program of the Harvester Company. At Brookhaven, Mississippi, an old, run-down and washed-out gully farm has been changed into a profitable dairy and diversified farm.

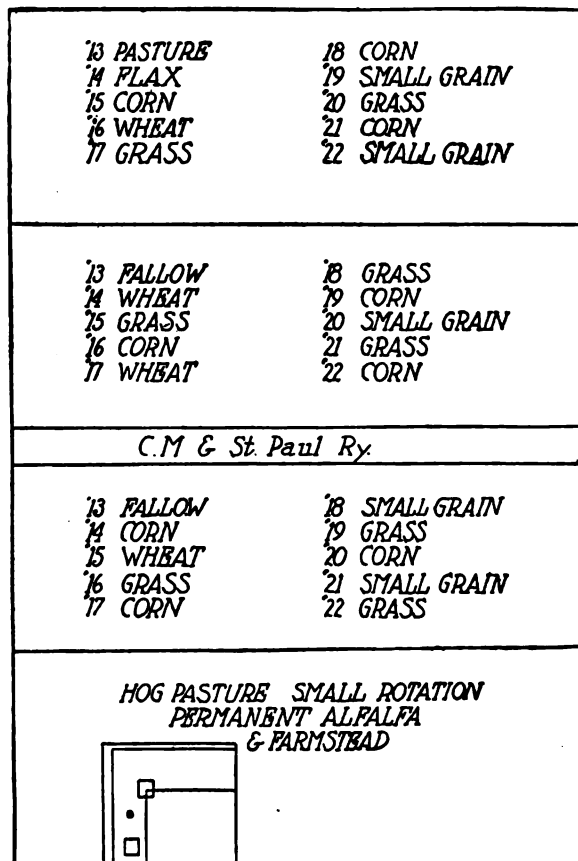
Ten years ago a picture of gloom greeted the eye in the form of large red gullies down every hillside;

with bottom lands under water, with large fire-blackened stumps dotted over the fields, no pastures, cows and workstock bought from other lands showing too plainly that they were also fed from other lands, and what was worse, the mental picture of certain ruin under boll weevil cotton conditions. All this has now been turned into one that, while it does not represent the management's ideal, does show a considerable distance traveled over the road towards that ideal.

The stumps have been removed and most of the land has been under-drained with clay tile. The gullies have been filled and permanent pastures or goodly bearing crops now occupy those once eye-sore spots. Over one-half the land is now in pasture, and these are stocked to their capacities with Jersey



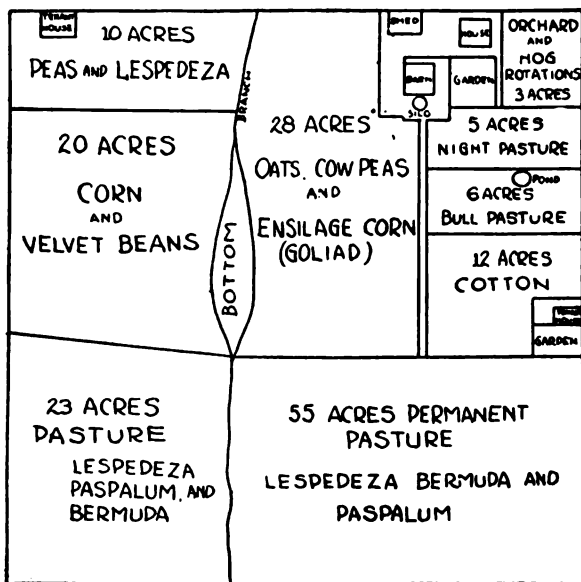
Layout of Fields on IHC Demonstration Farm, Grand Forks, N. Dak. The crop rotation for each field, 1913 to 1922 is indicated.



The IHC Demonstration Farm at Aberdeen, S. Dak., Showing Layout of Fields and System of Crop Rotation, 1913-1922.



Picking Seed Corn on the IHC Demonstration Farm, Grand Forks, N. Dak.



Brookhaven, Mississippi, Demonstration Farm. This map shows layout for 1918 of crops and pasture. Note the large acreage of legumes. In the fields in which grain crops were produced a crop of legumes followed. Lespe-deza occupied a prominent place in the acreage.

cows that please the eye and fill the pail.

So much for these three farms, which are devoted to discovering, testing and popularizing of practicable crops and farming methods. The Harvester Company has another farm at Hinsdale, Illinois, under the supervision of the Experimental and Engineering Department, where new machines are continually undergoing tests of greater severity than are likely ever to be encountered in actual practice. On hot summer days the president, vice-presidents and other executives may be found inspecting some new machines, bringing to bear in critical examination an unusual amount of



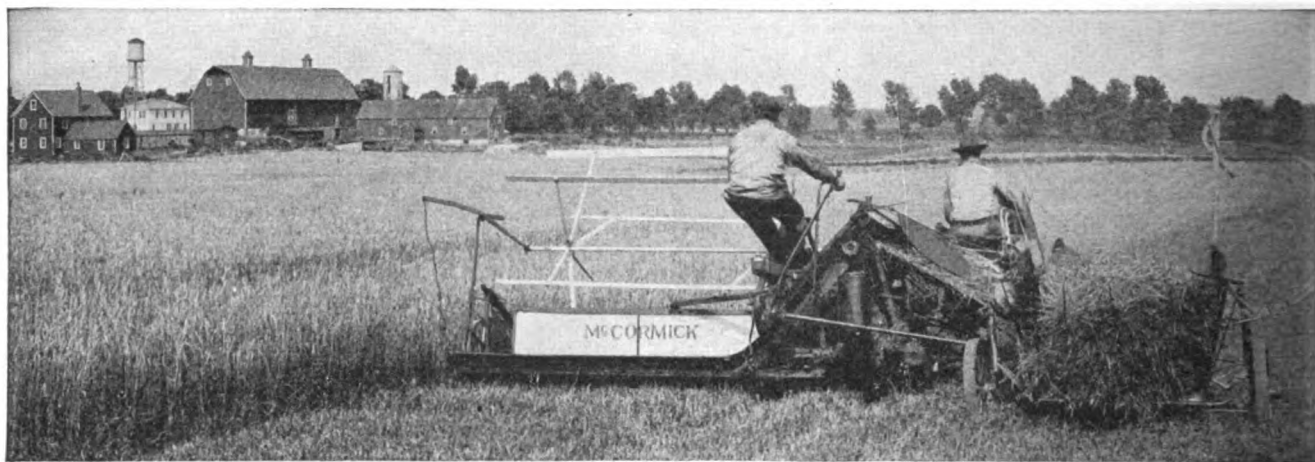
McCormick Corn Binders Can Be Operated by Horse or Tractor Power. In harvesting corn for silage the corn binder is indispensable. Don't let the stalks dry out.

farm machine experience. This development work is not confined to this Northern Illinois farm, but, for instance, beginning with the plowing season in Texas, when the farmers in the northwest are still by the fireside, tractors are started on their way, meeting conditions of each locality as they go north with the season until in September tractors, binders and other machines will have reached Canada. Such field tests always precede decisions to manufacture.

Persistent and continuous attention to the possibilities



The Brookhaven, Mississippi, Demonstration Farm Was Redeemed from a Washed-Out, Gullied Boll Weevil Farm to Productive Dairying and the Raising of Pure-Bred Jerseys. Many southern cotton growers have found that they can do the same.



The Harvester Demonstration and Testing Farm Near Hinsdale, Ill., Is the Place Where New Machines are Thoroughly Tried Out Before Being Offered to the Farmer. The officials of the Harvester Company are often found there with their sleeves rolled up. The equipment illustrated here is the McCormick power-driven binder with automatic shocker.

for new and easier methods of performing farm labors has been a policy of the Harvester organization for as long as it has existed, and the Hinsdale farm and the Texas-to-Canada trips and the personal examination regularly given to the new machines by the heads of the business are the means for giving practical application to this policy.

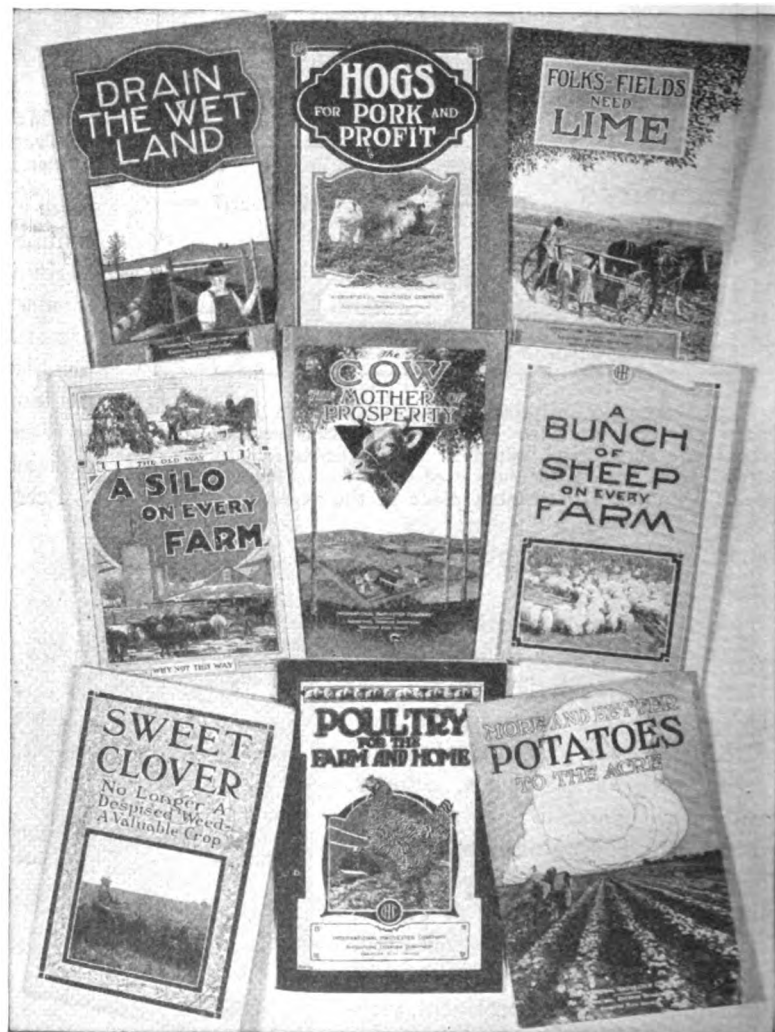
For ten years the Agricultural Extension Department has been helping the people in all sections of the country to improve their agricultural conditions, to build up their communities, to have better farms, better schools, better health, and better homes.

The Farm Prosperity Department

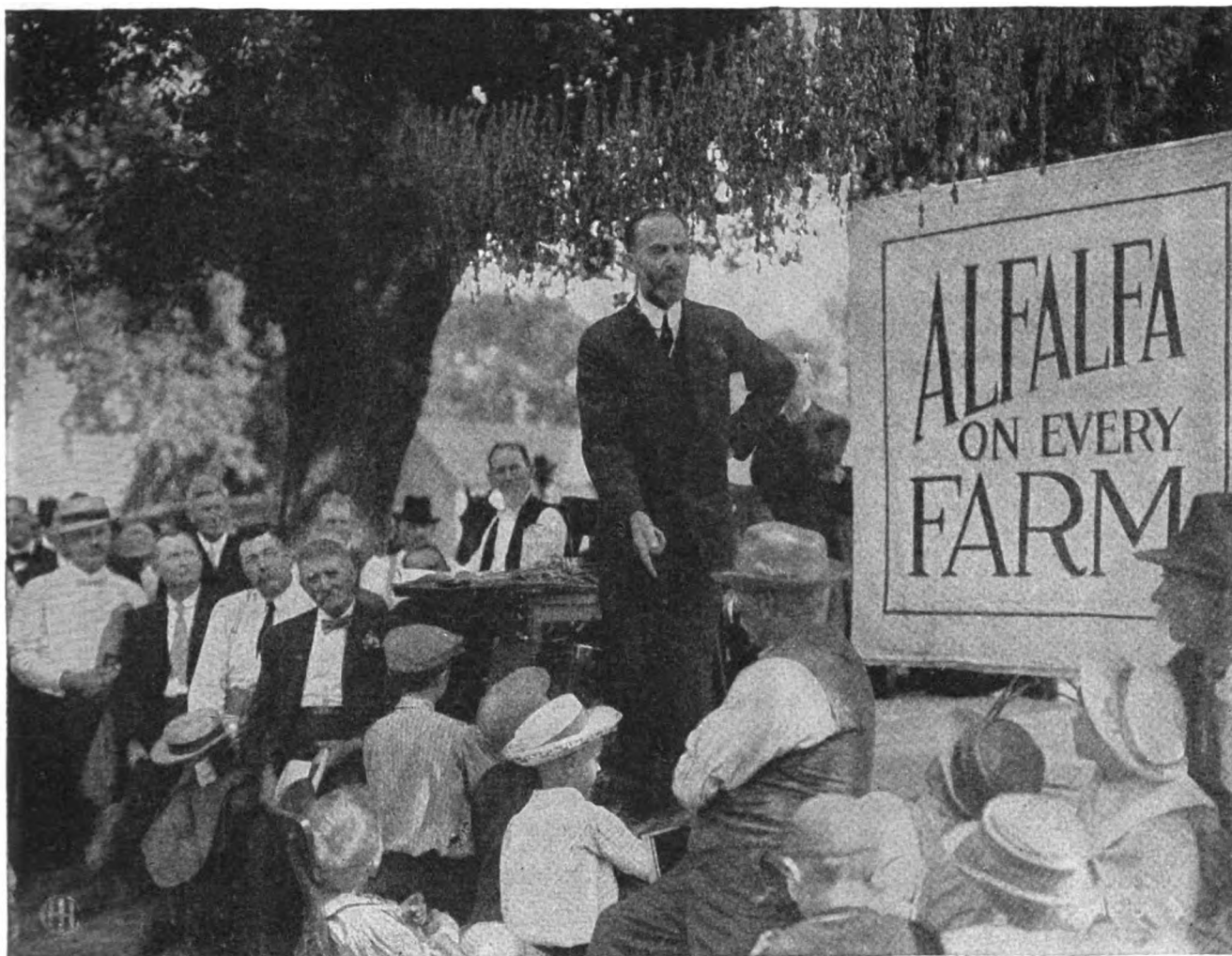
Ranking in size and helpfulness with many a state agricultural college—and doing much real progressive experimental work—publishing and distributing many instructive farm booklets, charts, films, slides—sending out speakers and lectures and sending them far to conduct farmers' institutes in every state in the Union; these are just some of the high spots in the story of the Agricultural Extension Work of the company.

Ten years ago Cyrus H. McCormick got the big idea of going down underneath the farm implement business to the real prosperity of the farming population. He saw that there was a big work to be done in many communities before there could be any real prosperity or buying power there. In some places it would be more dairying, in others diversified crops, in others alfalfa, in others more and better livestock, etc.

He determined to create an Agricultural Extension Department and he called upon Prof. P. G. Holden, then Dean of the Iowa State College of Agriculture, to organize the work. Prof. Holden accepted the call; and from 1914 to 1922, he and his associates have held 49,726 meetings attended by 11,706,331 persons seeking inspiration and instruction toward better farming. Over 1,000,000 miles have been traveled, and more than 4,500,000 pieces of literature distributed in this work.



A Few of the Very Popular and Instructive Illustrated Booklets Prepared by the Agricultural Extension Department. There are more than 100 different books and about four million copies have been distributed.



P. G. Holden, Director of the Agricultural Extension Department of the International Harvester Company Was One of the Original Alfalfa Boosters. He and his associates have carried a message of better agriculture and farm prosperity to every state in the Union during the past eight years.

Educational campaigns are conducted on diversified farming, the eradication of fungus and insect pests, home and community welfare, soil and stock improvement, and other subjects. Moving picture reels, slides, and charts are given wide distribution. Co-operation on an extensive scale is given with schools, colleges, experimental stations, county agents, etc.

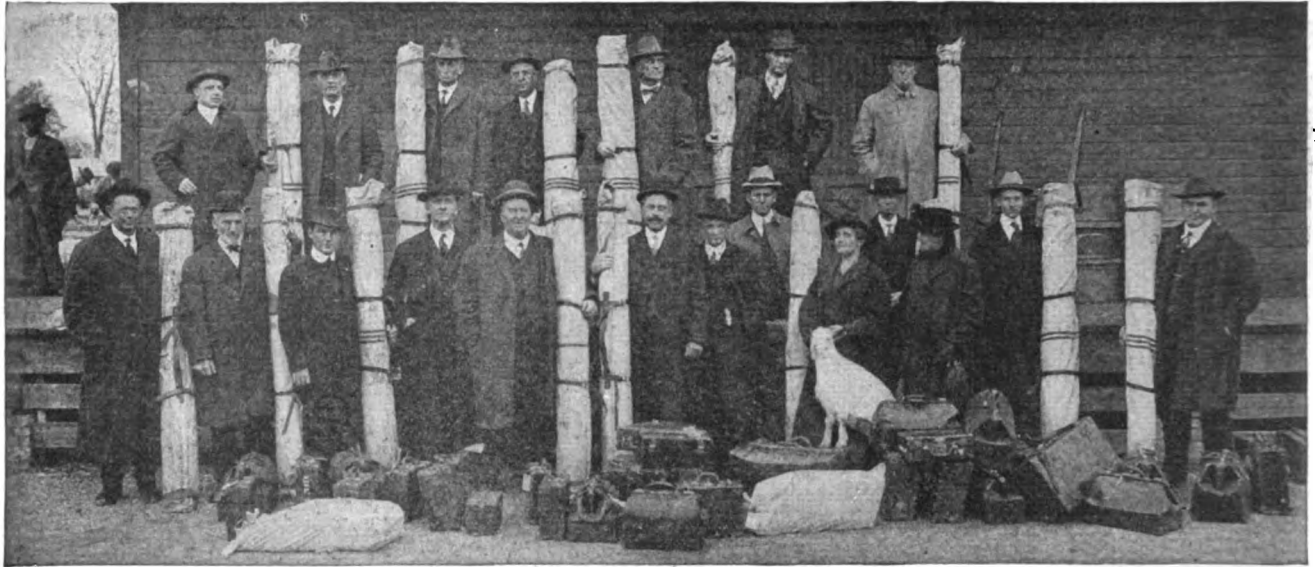
By utilizing the unique service of the Agricultural Extension Department, many a McCormick-Deering dealer has made himself the best known, best liked, and the most influential business man in his town. He has done this by helping the people of his community. The big idea in modern business is service, but it must

be unselfish service—real human service. The McCormick-Deering dealer can help the farmers and their wives. He can help the banker and the commercial club. He can help the county agent and the teachers. He can help the boys and girls. If he helps these people without any selfish motive—without any expectation of selling them something—everyone of them will be a booster for him, and express gratitude by boosting his business at every opportunity.

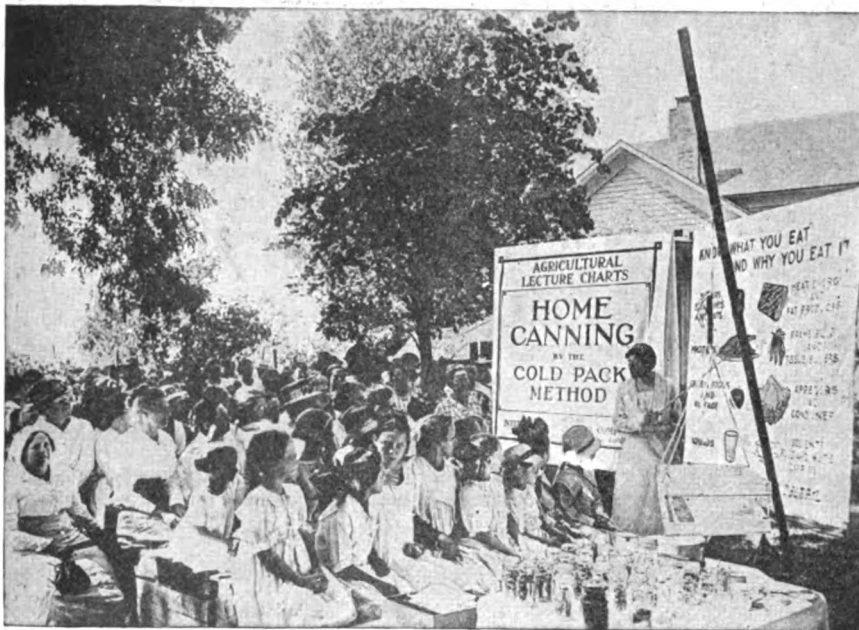
In many states it is very important to get the farmers to break away from the old accustomed one-crop system. As an example of this work of the I H C Extension Department, take Arkansas. For years it



A Few of the Agricultural Extension Department Lecture Charts. A great variety of farm subjects are covered in a clear, forceful way. These charts are in big demand by speakers, both amateur and professional. They find that these charts do more than half the talking.



A Typical Extension Department Crew with Charts and Demonstration Material at the Railway Station Ready to Start Out on a Campaign.



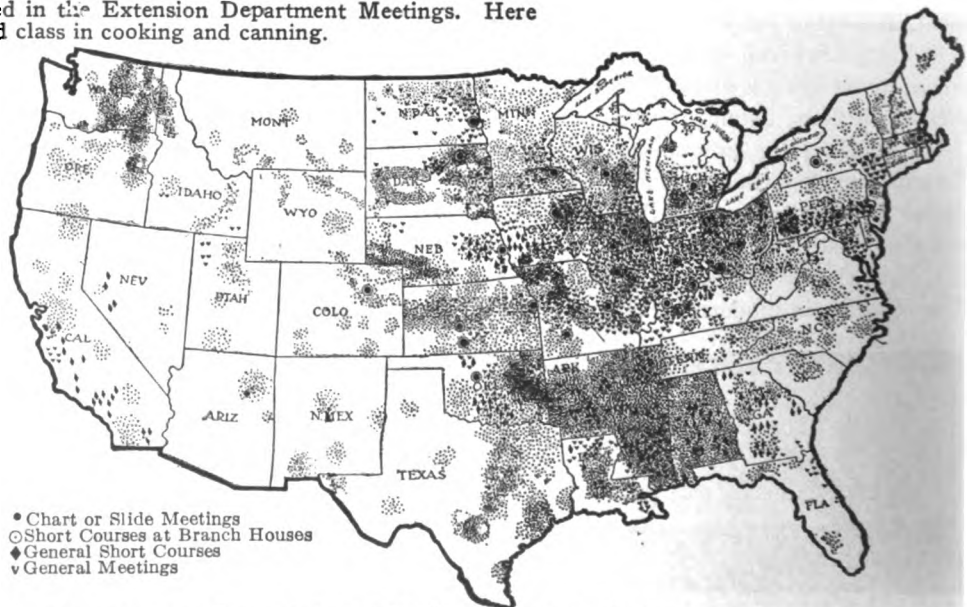
The Girls Are Not Overlooked in the Extension Department Meetings. Here is an interested class in cooking and canning.

four hundred and seventy meetings were held, the total attendance being 105,000.

The educational booklets of the Extension Department of the Harvester Company have become very favorably known. Some of the recent ones have to do with dairying, use of lime on soils, the drainage of land, potato culture, hogs, poultry, farm prosperity, grain, silos, etc., all popular subjects of very great importance to the prosperity of the country.

During the years 1918 and 1920, 3,930,078 of these booklets were

has been a cotton-raising state, and an effort was made to show the farmers there the benefits of diversified farming. To accomplish this purpose, three campaign crews started out from Little Rock, conducting a series of well addressed farmers' meetings and also sending out men to visit the rural schools and carry this gospel of diversified farming right to the local neighborhoods, with the rural schools as a center. All of the agricultural sections of the state were thoroly canvassed in this campaign. One thousand



Map Showing Co-operative Field Work of the Agricultural Extension Department of the International Harvester Company from January, 1913, to January, 1919. Each dot represents a community where effective work has been done in co-operation with local agencies.



McCormick-Deering Harvester-Thresher Cutting and Threshing the Crop in One Operation. This type of machine is used in large wheat fields of the West and Southwest where the climate is dry.



Titan 10-20 Tractor and Deering Rice Binder Harvesting Rice in the South. The ground is soft and wet and wide wheels are required on the tractor.

distributed. In 1921, 760,238 booklets were distributed. During the first half of 1922 one million copies have been distributed.

The Agricultural Extension Department believes in visual instruction. Its charts are in great demand by County Agents, farmers, institute speakers and others. An illustrated lecture book is sent along with each set of charts. With this material it is an easy matter to prepare a helpful worth-while talk for a farmers' meeting.

In addition to the standard charts a good many special charts are made up to order at simply the cost of labor and material.

Stereopticon slides, both plain and colored, and moving picture films are also furnished.

Modern Labor Saving Machinery

All the land in America would not

feed our 110,000,000 people if we did not have farm machinery with which to plow and cultivate and



McCormick-Deering Engine Operating a Chattanooga Power Cane Mill.



Making Syrup With a McCormick-Deering Chattanooga Cane Mill. This is a typical scene in the southern sugar-cane region.

harvest.

When the Indians owned this country, the land was virgin and fertile, yet it could have been bought for a cent an acre. Corn was grown, yet the Indians depended for their food largely upon the fruits of the chase.

Today the world depends for its food upon the plow, the harrow, the planter, the mower, the cultivator, the manure spreader, the binder, the cream separator, the tractor. We cannot produce food without tools—the weeds would starve us out.

To meet the demands upon us, we must plow faster and that means tractors. To get a good yield of corn we must have corn planters that will drop as many kernels as we want and drop them true.

To insure a maximum of production, we cannot depend upon the

shovel and the hoe. We must have disks for cultivating the soil, spring tooth harrows to kill the weeds in our alfalfa.

To harvest our crops and take care of them, we must have mowers, binders, rakes, ensilage cutters, threshing machines.

Originally the heavy clumsy plow was used, the seed sown by hand, harrowed into the ground by drawing bushes over it, the grain was cut with sickles, hauled to the barn and threshed with flails; the winnowing was done with a sheet attached to rods on which the grain was placed with a shovel, then tossed up and down by two men until the wind had blown out the chaff.

Now the ground is plowed with



P. & O. Diamond Gang-Plow with 5-Horse Hitch.



35 acres a day.

An even greater saving of time in preparing the soil for planting is now possible.

One man can spade about one-sixth of an acre of ground in 10 hours. With a two-horse team and a walking plow he can plow two acres of land in 10 hours; with a horse gang plow having two 14-inch bottoms about five acres; with a tractor plow with three 14-inch bottoms drawn by a tractor, 10 to 12 acres.

Until a few years ago the common method of harvesting corn was to husk it by hand. One

In Small Fields with Limited Power the Walking Plow is Still a Popular Implement.

a gang plow and pulverized with a harrow drawn by a tractor; the seed is sown with a mechanical seeder; the harvesting, threshing and sacking of the wheat is done with the binder, the thresher and the combined harvester-thresher.

When we cut grain with a sickle, one man could harvest half an acre a day; when he used a scythe, he could harvest an acre a day; with the cradle he could harvest 2 acres a day; with the first reaper 12 acres a day; with a self-binder 20 acres a day, and with a modern tractor and a 10 foot power drive binder,



In the Heavy Texas Gumbo and Other Difficult Soils the Disk Plow is Preferred. Here we see a P. & O. 4-furrow tractor disk.



Many of the Corn Fields in the West and Southwest Are Plowed and Planted in One Operation with McCormick-Deering P. & O. Listers

man with a team and wagon drove thru a field. The man walked alongside the wagon and pulled the corn and husked it from two rows as he went, throwing the ears into the wagon.

Now, especially in large fields, the work is done by the corn picker. This machine is generally pulled by five horses or a tractor, and husks the corn and puts it in the wagon *as fast as the team can walk*. From five to seven acres a day can be husked in this way.

With a corn binder, three men can cut and shock from five to seven acres of corn fodder in a day. By the hand method it was a good day's work for a man to cut and shock one acre.

With a one-horse cultivator, two

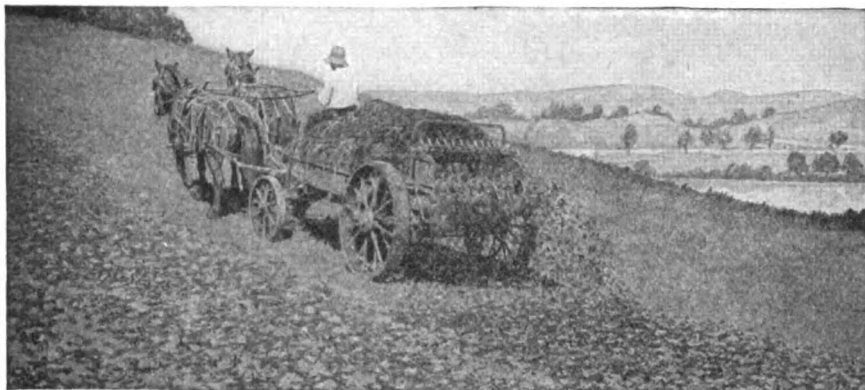
or three acres was a day's work for one man; 25 or 30 acres now is possible. Where a man could cut only



Listed Corn is Cultivated With this Type of Machine. This is a two-row McCormick-Deering P. & O. Lister cultivator.



Three-bottom Tractor Plow and McCormick-Deering Gear Drive Tractor at Work on the Harvester Test Farm Near Hinsdale, Ill.



Put Back in the Soil What Growing Crops Take from it. A manure spreader is a necessity on every farm.

about one acre of hay a day by hand, he can now mow 15 or 16 acres.

With a tractor a farmer can raise larger crops because he gets his work done in season, plows deeper, makes a better seed bed and cultivates and tills the soil more and better after the crop has been planted. He can increase his output. He can farm more than twice as much land and do it better, with less labor and at less expense. Not only can he make more crops grow on the same area, but he can tend more than twice the acreage.

One man and a tractor can now do the work that required 50 men in the time of Napoleon.

Tractor enthusiasts have repeatedly claimed that tractors were especially well adapted for speeding up work on the farm in wet springs and thus overcoming serious delays and assuring full crops by proper and timely seed-bed preparation. Last spring was a banner year to substantiate this claim. The entire corn belt was veritably deluged. Operations everywhere were delayed. Planting time came and

had to in order to pull himself out of a very serious situation.

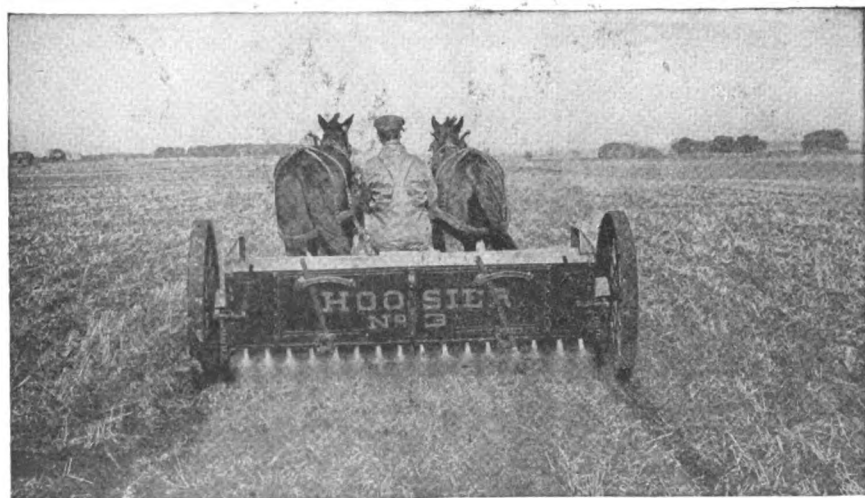
That the tractor accomplished its purpose and assured a crop has been proved by a recent investigation car-



Special Potato Machinery Has Been Developed that Takes Most of the Heavy Work Out of the Potato Crop. Here we have the McCormick-Deering riding potato digger.

ried on among farmers who had bought tractors this spring.

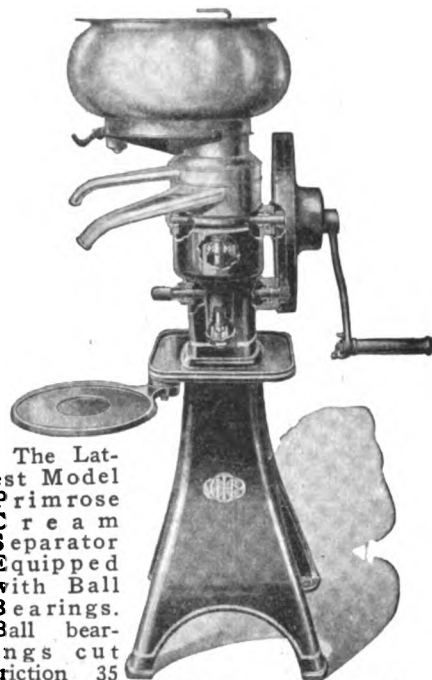
Here, for instance, is R. M. Gillespie, of Rockwood, Ill., who on May 14, because of continual rains, literally became mired with his horses and faced the prospect of greatly curtailed crops. He made a quick and what might be called a last resort purchase of a tractor; then by day-and-night operation, as Mr. Gillespie expresses it, "I got my crop in the best shape I ever planted a crop." Here also is Gust Peterson, of Oneida, Ill., who, like a great many of his neighbors, was a good two weeks behind last spring in his plowing. A new 15-30 tractor made possible a crop for him. With this machine he plowed forty acres in eighteen hours. "In turning out this amount of work



Sour Soils Need Lime. Lime sweetens the soil and increases the crop yield. Here is a practical and economical way to apply it with a lime sower.



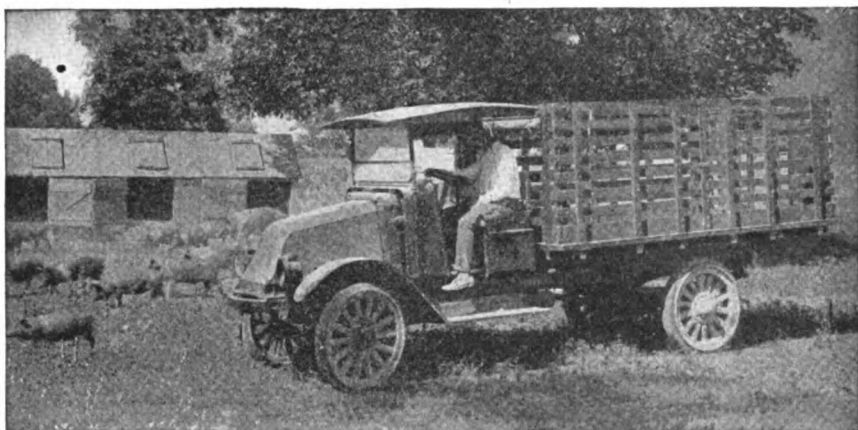
Weber Wagons Have Been the Standard Transportation for Farmers for the Last Seventy-five Years.



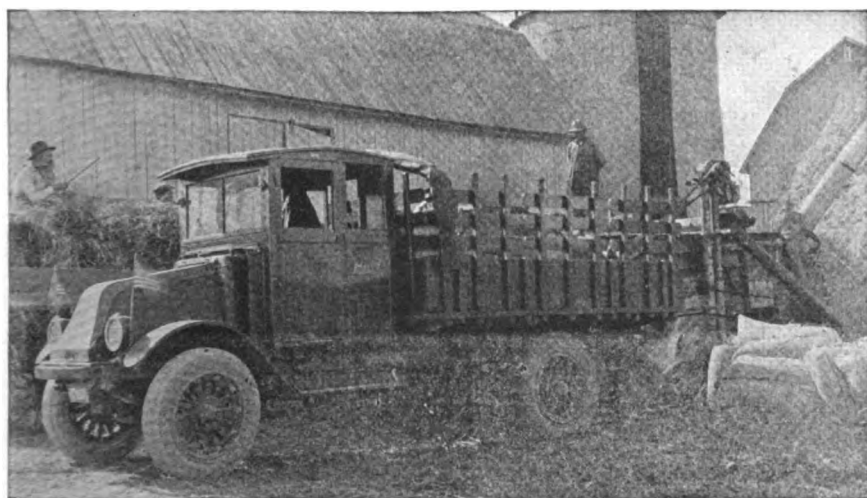
The Latest Model Primrose Cream Separator Equipped with Ball Bearings. Ball bearings cut friction 35 per cent and take ten revolutions off the crank—achievements the practical farmer understands, and seeks.



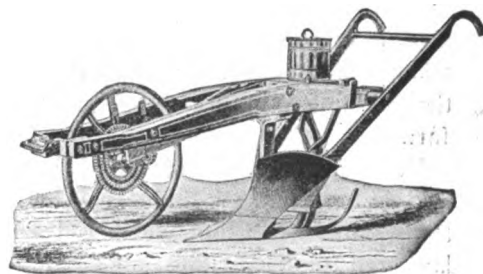
The Road Engineer Is Free Service Inspector to Owners of International Motor Trucks. He rides in a special speed truck, has stored in the well appointed special body many replacement parts and tools, and scatters along the way helpful suggestions and advice. International Motor Truck owners welcome him because every visit means money saved, and mileage added to the truck.



The International Motor Truck Simplifies the Marketing of Livestock Mr. E. C. Stone, the Hampshire swine man, uses this outfit on his farm near Peoria, Ill.



International Motor Truck Hauling Grain Direct from Thresher to Grain Elevator.



The 1883 Model of the P. & O. Lister, the First Model of Which Was Brought Out in 1866, Has Survived the Competition of Models and Ideas and Grown Into an Envious Trade Position, Wherever Listers Burst the Furrows.

in that length of time," truthfully says Mr. Peterson, "you sure do not stay behind in your work for any length of time."

That farming is the greatest gambling game in the world has become quite a commonplace saying. The farmer plants seed and then waits to see what will turn up. If the seed is good, the soil conditions right to germinate it, sufficient moisture falls to grow the crop, the weather is not too hot nor too cold, not excessively wet nor too dry, and no hail nor windstorms destroy the ripened crop, the return will probably be satisfactory—*always provided* that the seed was planted in



Making a Good Seed Bed in One Operation. Here a McCormick-Deering tractor is pulling a tractor harrow and Dunham culti-packer.



Tractors Are Becoming Popular for Orchard Work. The implement shown in this illustration is a McCormick-Deering leverless disk harrow.

time and the harvest was not delayed too much.

And right there we have the most influential factor affecting crop yields—timeliness in seed-bed preparation, planting, and harvesting. This has a greater influence on the farmer's profits than any other item. Control this one factor and you have taken a long step toward reducing the gambling element connected with farming.

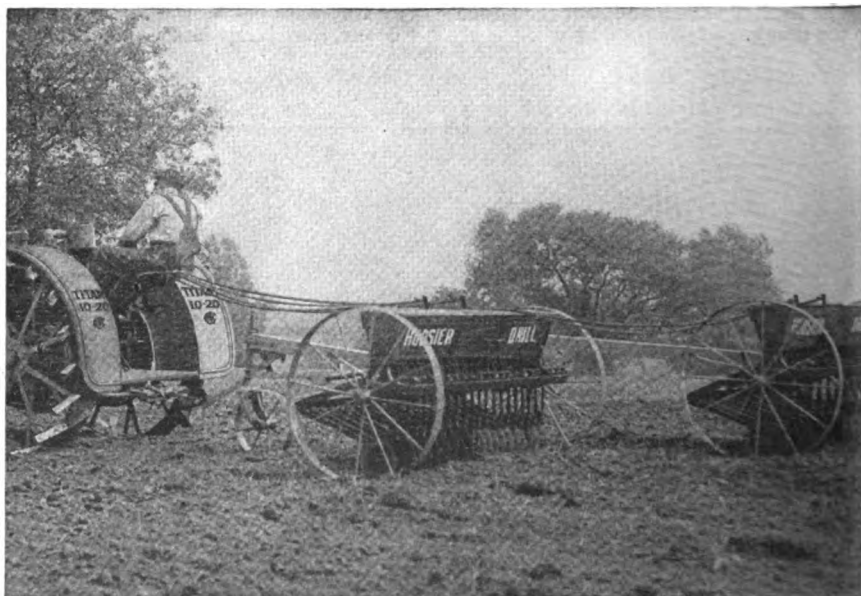
But timeliness in performing the various operations is influenced by the weather—dry, hot weather delays fall plowing; late snows or heavy spring rains frequently prevent getting at the spring work when it should be done. Such was the case last spring. Conditions were so extremely adverse that inability

to till and plant *on time* threatened disaster for many farmers. But the tractor played its trump card—its capacity to crowd the work intensively day and night, taking advantage of favorable breaks in the weather, doing in hours work that ordinarily required days.

Implement Value vs. Cost

During the past fifty years we have witnessed great advance in the development of equipment for the farm. One can scarcely realize the stages by which we have arrived at the present one where so many of the tasks on the farm have been taken over by machinery.

During the past five years the value of farm machinery in terms



A Tractor Cuts in Two the Work of Seeding, as Two Grain Drills Are Hitched to Operate Behind the One Outfit.



Planting Corn the Way They Do it in the Corn Belt. This International corn planter puts the kernels together in the bottom of the furrows, and marks the next row.

of what it can do has to some extent been lost sight of. It has been more a question of what will the new implement cost? Prices of all commodities rose during the war and afterward, but the prices of farm implements rose less perhaps than any other necessity. Just how moderately they rose and how much they are now below other prices is vouched for by the Congressional Joint Commission of Agricultural Inquiry, Sidney Anderson, Chairman.

The Commission recently issued a very comprehensive report on the condition of agriculture. The report is made up of four volumes devoted to the following parts:

III, of the report on transportation):

"In Part I of this report, pages 188 to 192, is given



McCormick-Deering Two-row Riding Corn Cultivators Get Over the Field in a Hurry and Do a Good Job.



This Outfit Cuts the Corn, Ties it in Bundles and Elevates the Bundles Into the Wagon. This bundle elevator can be attached to any McCormick corn harvester. It is a labor and time saver.

Part I, The Agricultural Crisis and Its Causes; Part II, Agricultural Credit; Part III, Transportation as applied to Agriculture; Part IV, Marketing and Distribution of Commodities Purchased and Sold by the Farmer.

The purpose of the inquiry was to uncover absolute facts. In the preparation of the third volume on transportation, for instance, over 1,600 people, farmers as well as manufacturers, were consulted. More than 250,000 questionnaires were also circulated and brought out valuable information. The facts as presented in the report are convincing.

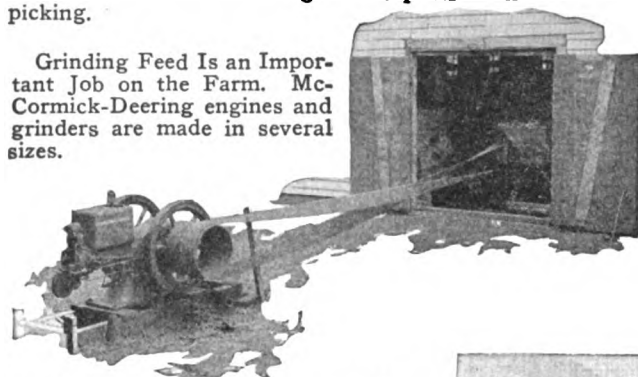
Concerning farm implement prices, the price findings of the commission are summarized in the following paragraph (page 156, Part

the prices by years of various agricultural implements from 1913 to 1922, inclusive. From this it will be noted that the peak reached in prices of agricultural implements over 1913 or 1914 was 75 per cent, whereas the wholesale prices of all commodities reached a peak of 172 per cent. From investigations made by this commission it was also found that the factory prices of agricultural implements, if power equipment and twine are not included, when compared with the prices of 1914, show an increase of 41 per cent over the 1914 prices; if power equipment and twine were included in the computation, the increase of prices over those of 1914



The McCormick-Deering Corn Picker Takes the Ears from the Stalks and Delivers Them to the Wagon. It picks corn cleaner than the average hand picking.

Grinding Feed Is an Important Job on the Farm. McCormick-Deering engines and grinders are made in several sizes.



would be less than 20 per cent, while the prices of all commodities when compared with the prices of 1914 show an increase of 52 per cent."

In the same report the commission goes on to describe the method of distributing machines and justifies the present organizations that are serving the farmer in the following words:

"Our investigations also lead us to the conclusion that the agricultural implement companies render special services to the farmers in the establishment of their branch houses thruout the various agricultural sections of the United States. About

What of the Future?

Much of this story rightfully tells of the years gone by, when the Harvester Company was in the making. Prominence has been given to the invention of the reaper because it marked the beginning of the successful race in which mechanical equipment on the farm has kept ahead of the world's demand for food.

Of almost equal importance is the part the Harvester organization has taken in a gradual growth of ninety



McCormick-Deering Husker and Shredder Puts the Shredded Stalks Into the Mow and the Ears Husked Clean Into the Wagon.



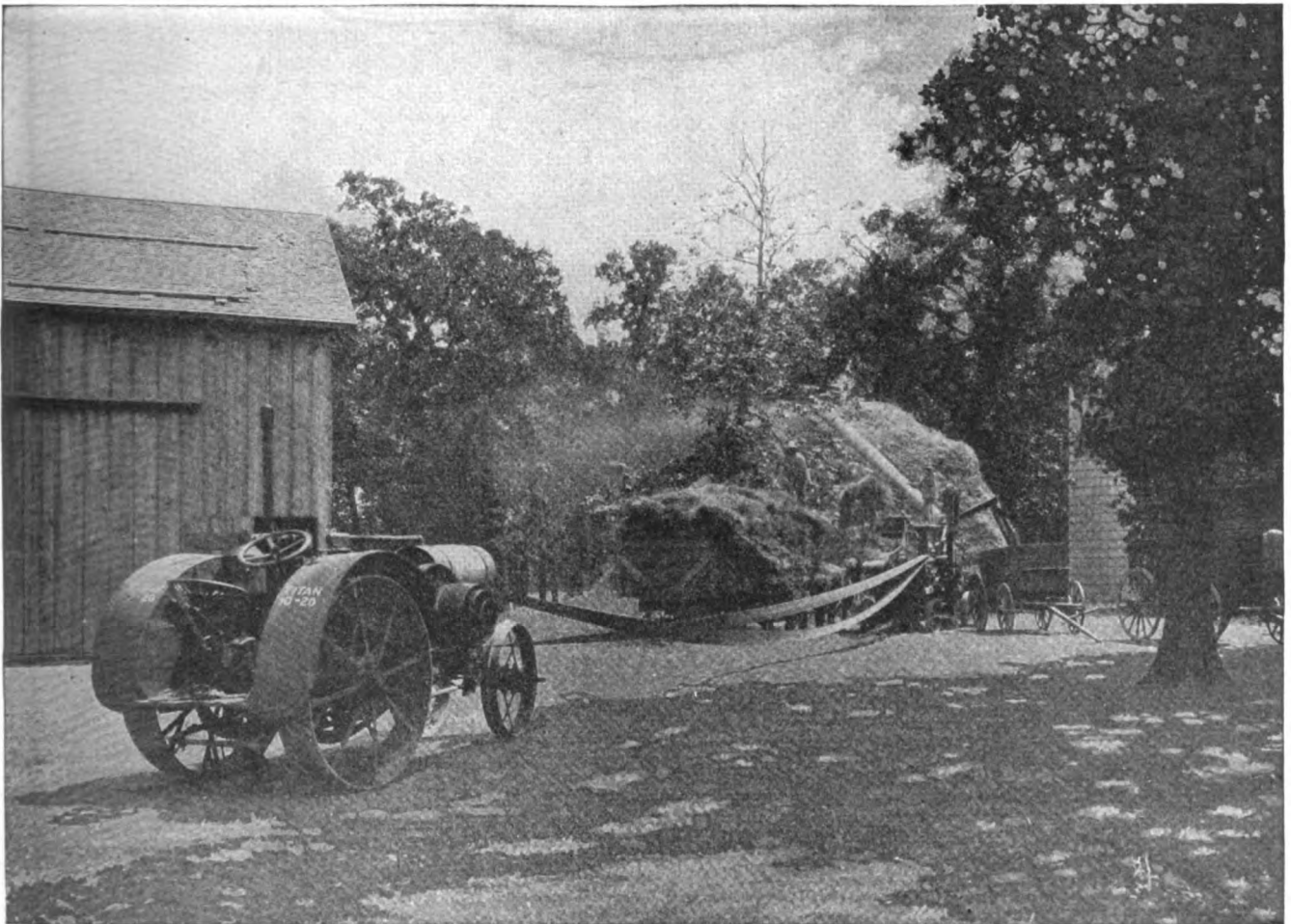
Here Is a Favorite Machine with the Corn Belt Farmers, a Cylinder Corn Sheller. It puts the shelled corn in the bin and leaves the cobs outside.

85 per cent of the farm implements are shipped direct to purchasers, including both dealers' and farmers' co-operative associations. The remaining 15 per cent are distributed to the purchasers thru the branch houses, which also carry emergency stocks of machines and repair parts, including repairs for machines sold more than thirty years before. A further distinct service to agriculture is rendered thru these branch houses by their forces of experts who co-operate with the dealers in assisting farmers to set up, adjust and repair machines."

years in creating and manufacturing other tools to make farming better and easier. In securing this result, ideals of management and singleness of purpose, notable for their success, have been brought into such effective play that the reader may well ask, not how close is the possibility of starvation, but what will this great organization discover and invent in the tomorrows that lie ahead? What further fields for service and genius will its executives and inventors invade in the ceaseless search for better method and new principle?

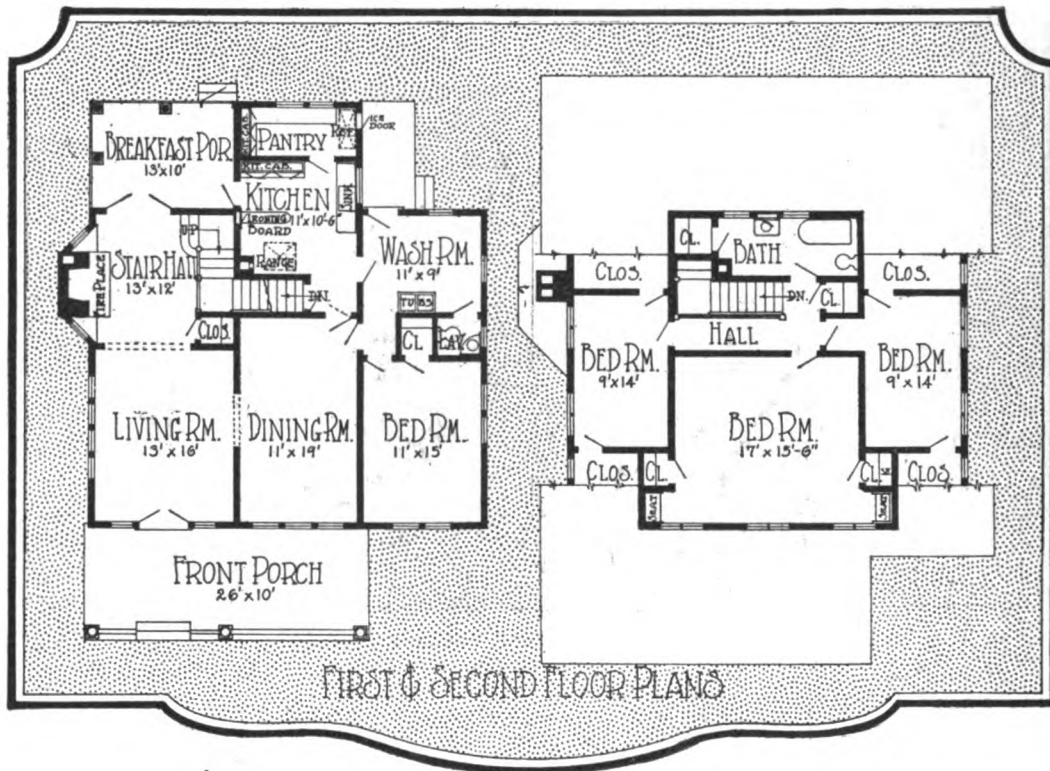


Going to School on Time and in Comfort. International speed trucks are used extensively for consolidated school transportation.



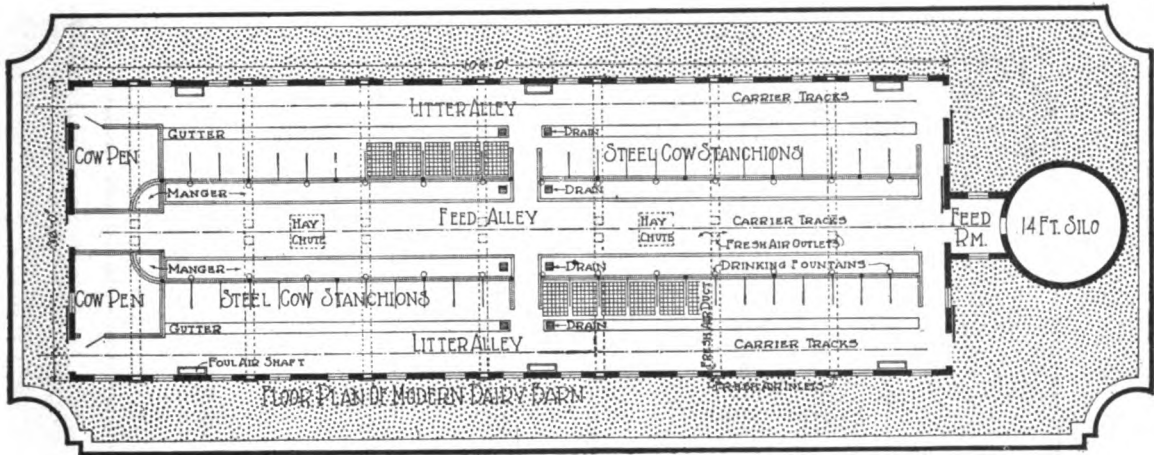
McCormick-Deering Thresher Being Driven by a Titan 10-20 Tractor. The tractor is governor-controlled and no operator is required.

BUILDING DESIGNS



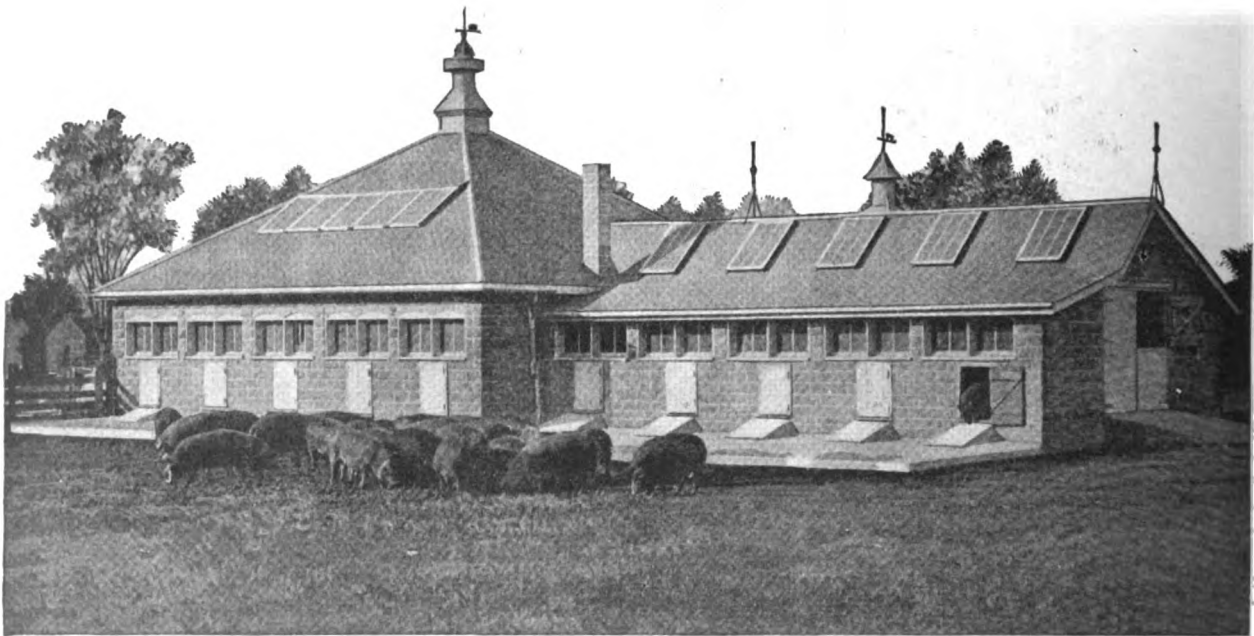
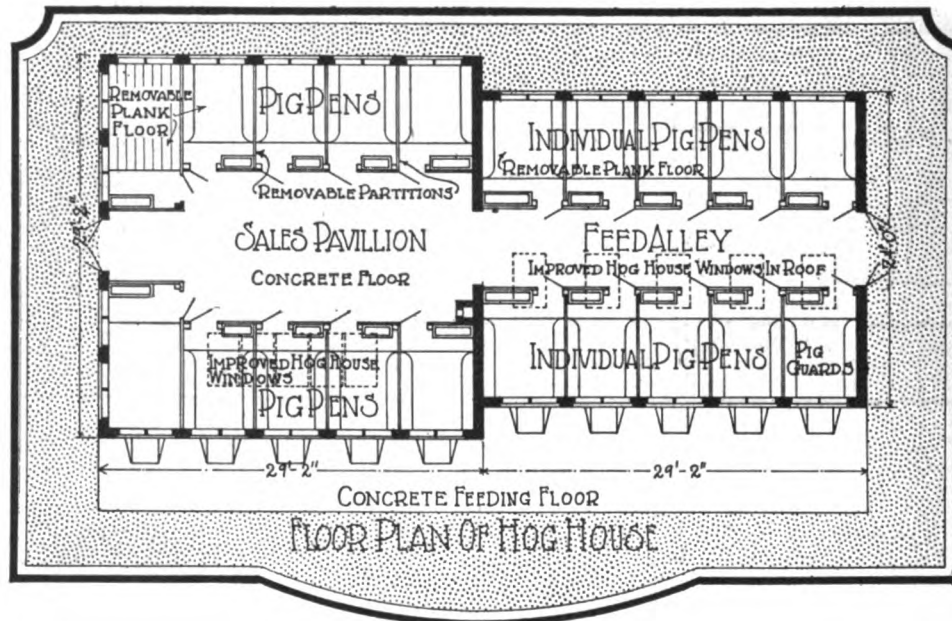
BEAUTIFUL FARM HOME. Here is a farm home that can well be termed a beauty. The long sweep of the roof, both at the front and back, the wide, deep porch and the dormer windows in the roof, all make it a most inviting home. It is of frame construction with stucco over expanded metal lath. The house is 37 feet wide and 39 feet deep. It contains nine rooms and bath, counting the large stair hall in which is the fireplace. The arrangement of the rooms is shown on the floor plans. One excellent and unusual feature is that the living room, stair hall and breakfast porch are practically one room.

FARM BUILDING DESIGNS



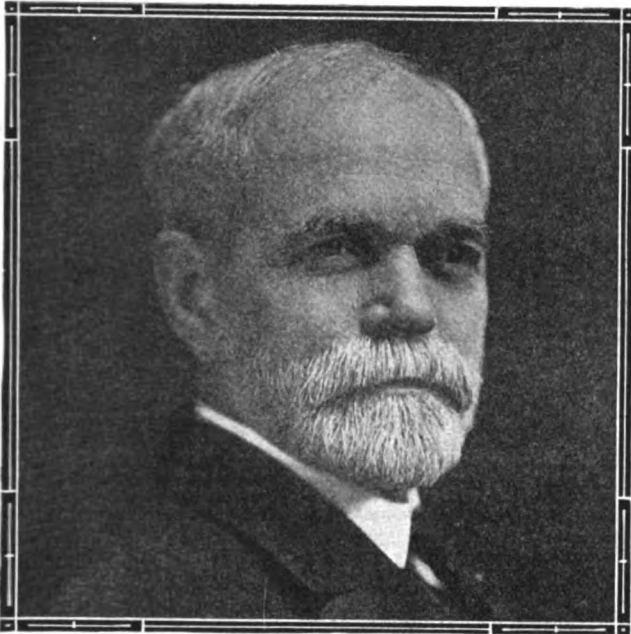
HEALTHFUL HOME FOR THE MILKERS. Good cows need a good home, a stable that is well lighted, well ventilated and clean. The dairy barn shown in the illustration is of that type. It is 36 feet wide and 106 feet long, of frame construction on a concrete foundation and has a concrete floor in the stable. Above is mow room for the roughage, while connected with the barn by a feed room is a 14-foot brick silo. The cows are faced in with a feeding alley running thru the center of the barn and the litter alleys along the walls. Over both alleys are carrier tracks for taking the feed to the mangers and for removing the litter. The floor plan shows the stall arrangement.

FARM MECHANICS BUILDING DESIGNS



HOG HOUSE AND SALES PAVILLION. Breeders of pure-bred hogs will be interested in this design for a farrowing house and sales pavillion. The pavillion has removable partitions between the pens, so that the space may be used for the sows, and cleared when a sale is to take place. The building is 58 feet 4 inches long, with a width of 29 feet 2 inches at the pavillion end and 24 feet for the farrowing house. The building is constructed of concrete blocks and has a concrete floor and feeding floor outside. Roof windows provide for light and ventilation.

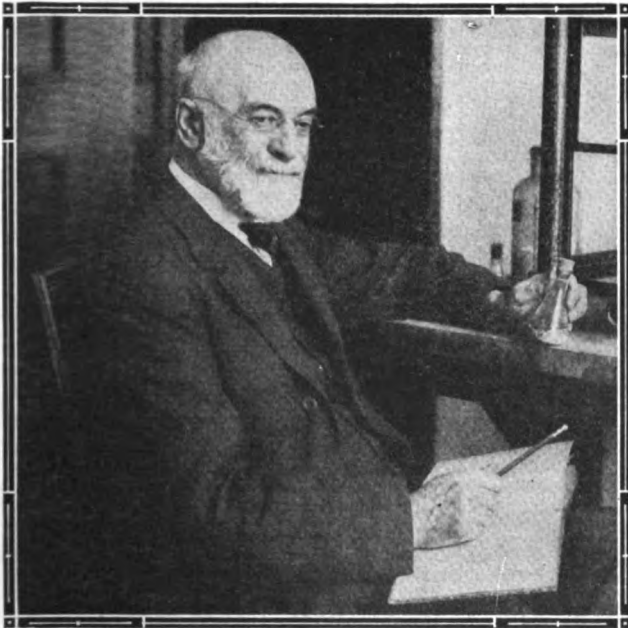
Who Did Most for Farmers ?



EUGENE DAVENPORT, formerly dean of the Agriculture College of the University of Illinois, is one of the best known of the men in agricultural educational work. He attended the agricultural college of his native state, Michigan, receiving his first degree in 1878, later holding several positions with that institution. He became dean of the Illinois College of Agriculture in 1895, holding that position until he resigned in 1922 to return to the farm of his father in Michigan. To his efforts is credited the growth in influence and size of the Illinois college, one of his projects being the establishment of a special department in Farm Mechanics. Thru his writings and lectures, Dean Davenport did much in bringing American agriculture to its present high plane.



"DEAN of Deans" is the title affectionately applied to **W. A. HENRY** first dean of agriculture of the University of Wisconsin. He is generally credited with having had much to do with starting the Short Course in Agriculture in America, in originating the first Farmers' Institute movement, in the establishment of the first Dairy School in America, and in pioneering many other activities in the field of agricultural education. His text on animal feeding is a masterpiece and is so recognized thruout the civilized world wherever animals are fed for meat, milk, or power. He continued as the executive of the Badger institution until 1907 when his health forced him to retire from active work. He has left an indelible impress, not only upon the agriculture of Wisconsin, but upon the entire nation.



ALTHO his work is highly appreciated in every state in the Union, the services of **DR. S. M. BABCOCK** to American agriculture can never be measured adequately. By the invention of the Babcock test he gave to the dairy world a means of measuring the butterfat producing abilities of the dairy animal. Upon this work has been founded the progress made by each of the five dairy breeds in keeping prominent the profit producing factors of dairy cows. His original tester worked out in the laboratories of the University of Wisconsin has never been changed in principle. His unselfishness in devoting it to the world has been the inspiration of thousands of young men who have attended America's agricultural colleges.



LUTHER BURBANK is known the world over for his scientific work with fruits and flowers. "Plant wizard" is the name frequently applied to him because of his ability to eliminate the objectionable features of the many of the fruits and vegetables native to America. He was born in Lancaster, Mass., in 1849, and spent his boyhood on a farm. Since 1875 he has conducted the Burbank experimental farms at Santa Rosa, Calif. Among his contributions to horticulture are the Burbank potato, many plums and stoneless prunes. Thousands of trees, plants and flowers are grown at his farms for experimental purposes. Mr. Burbank is a member of a number of organizations having to do with flowers and trees.

Spray Calendar for Control of Insects and Fungous Diseases of Fruits, Nuts and Vegetables

Fruit or Nut	Insect or Disease	What to Use	Dilution to 50 gallons of water	When to Spray
Apple	San Jose scale	Dry Lime-Sulfur	12 to 15 lbs.	In fall after leaves drop or in spring when trees are dormant
	Oyster Shell Scale	Dry Lime-Sulfur	12 to 15 lbs.	In fall after leaves drop or in spring when trees are dormant
	Scurfy Scale	Dry Lime-Sulfur	12 to 15 lbs.	In fall after leaves drop or in spring when trees are dormant
	Apple Aphis	Nicotine Sulfate	½ pint	When buds are showing tip-green
	Codling Moth	Dry Arsenate of Lead	1 to 1½ lbs.	(1) At fall of the blossoms, before the calyx closes. (2) Three weeks after fall of the blossoms (3) Ten weeks after fall of the blossoms (4) Fourteen weeks after fall of the blossoms (5) Seventeen weeks after fall of the blossoms
	Curculio	Dry Arsenate of Lead	1 to 1½ lbs.	(1) Just before bloom, in cluster-bud (2) At fall of blossoms (3) Three or four weeks later (4) Ten weeks after fall of the blossoms
	Apple Maggot	Dry Arsenate of Lead	1 to 2 lbs.	(1) Last week in July (2 and 3) Three and six weeks later
	Red Bugs	Nicotine Sulfate	½ pint	(1) Just before blossoms in cluster-bud (2) At fall of blossoms
	Bud Moth	Dry Arsenate of Lead	1 to 1½ lbs.	(1) When flower clusters first appear (2) Just before blossoms open
	Canker Worm	Dry Arsenate of Lead	1 to 2 lbs.	(1) Just before bloom cluster bud (2) At fall of blossoms
	Apple-Tree Tent Caterpillar	Dry Arsenate of Lead	1½ to 2 lbs.	When worms first appear
	Anthraxnose	Bordeaux Mixture	4 lbs. lime 4 lbs. blue-stone	(1) About September 15th (2) As soon as fruit is picked (3) Two or three weeks later
	Bitter Rot	Bordeaux Mixture	4 lbs. lime 4 lbs. blue-stone	Spray about the middle of June and keep fruit coated the rest of the season
	Black Rot	Bordeaux Mixture	4 lbs. lime " bluestone	(1) About mid-July (2) Two weeks later
	Blotch	Dry Lime Sulfur Bordeaux Mixture	4 lbs. 4 lbs. lime " bluestone	(1) Two or three weeks after fall of blossoms (2) Five weeks after fall of blossoms
	Powdery Mildew	Dry Lime-Sulfur	3 lbs.	(1) At the fall of the blossoms (2) Three weeks later In extreme cases, two additional applications at three-week intervals may be required
	Cedar Rust			Cut down cedars within one mile of orchard
	Scab	Dry Lime-Sulfur Bordeaux Mixture	3 to 4 lbs. 4 lbs. lime 4 lbs. blue-stone	(1) Just before blossoms in cluster-bud (2) At fall of blossoms (3) Within a week or ten days later (4) Latter part of July in Atlantic States if weather is cool and wet
	Sooty Blotch	Bordeaux Mixture	3 lbs. lime " bluestone	Apply the middle of July
Cherry	Fruit Flies	Dry Arsenate of Lead	1 to 1½ lbs.	(1) Early in June (2) Mid-June
	Curculio	Dry Arsenate of Lead	1 to 1½ lbs.	(1) Just before the blossom buds open (2) At fall of blossoms (3) A week or ten days later
	Cherry Slug	Dry Arsenate of Lead	1 to 1½ lbs.	When slugs appear
	Cherry Aphis	Nicotine Sulfate	½ pint	As soon as lice appear, but before leaves curl

Spray Calendar for Control of Insects and Fungous Diseases of Fruits, Nuts and Vegetables

—Continued—

Fruit or Nut	Insect or Disease	What to Use	Dilution to 50 gallons of water	When to Spray
Cherry	Brown Rot	Dry Lime-Sulfur	1 to 1½ lbs.	(1) Just before the bloom (2) At fall of blossoms (3) A week or ten days later (4) When fruit begins to color
	Leaf Spot	Dry Lime-Sulfur	1 to 1½ lbs.	(1) At fall of calyx (2) Ten days or two weeks later (3) Directly after fruit is picked, and three weeks later
Currant and Gooseberry	Currant Worm	Dry Arsenate of Lead	1 to 1½ lbs.	When worms first appear
	San Jose Scale	Dry Lime-Sulfur	12 to 15 lbs.	Early in spring while plants are dormant
	Currant Plant Louse	Nicotine Sulfate	½ pint	As soon as eggs hatch in spring but before leaves curl
	Anthraxnose	Dry Lime-Sulfur Bordeaux Mixture	3 to 4 lbs. 9 lbs.	(1) When leaves are unfolding (2) Every ten days to two weeks until five or six sprays have been applied
	Leaf Spot	Dry Lime-Sulfur	3 to 4 lbs.	Same as for Anthracnose
	Powdery Mildew	Dry Lime-Sulfur	3 to 4 lbs.	(1) When buds burst (2) At ten day intervals until five applications have been made
Grape	Rose Chafer	Dry Arsenate of Lead Molasses	2 lbs. 1 gal.	At first appearance of beetles and one week later if beetles are still present
	Flea Beetle	Dry Arsenate of Lead	1 to 1½ lbs.	Between middle of June and middle of July
	Leaf Hopper	Nicotine Sulfate	1½ pints	Early in July
	Grape Berry Moth	Dry Arsenate of Lead	1½ lbs.	(1) Just before fruit sets (2) About ten days later (3) Mid-July
	Grape Root Worm	Dry Arsenate of Lead	1½ lbs.	(1) Soon after beetles appear (2) Ten days later
	Black Rot	Bordeaux Mixture	3 lbs. lime 3 lbs. blue-stone	(1) When second or third leaf is showing (2) Before the blossoms open (3) After fall of blossoms (4) After ten days to two weeks later (5) Again in ten to fourteen days
	Powdery Mildew	Sulfur		(1) When shoots are six to eight inches long (2) Just before or during bloom (3) On very susceptible varieties (California) about the time the grapes are half-grown
Peach	San Jose Scale	Dry Lime Sulfur	12 to 15 lbs.	In fall after leaves drop or spring before buds swell
	Peach Tree Borer			Dig out borers in June and September
	Peach Twig Borer	Dry Lime-Sulfur	12 to 15 lbs.	Just after buds begin to swell
	Curculio	Dry Arsenate of Lead Lime	1 to 1½ lbs. 3 lbs.	(1) When shucks first are pushing off (2) Again when all shucks are off (3) Three or four weeks after fall of blossoms
	Brown Rot	Lime and Sulfur	8 lbs of each	(1) When all shucks are off (2) Three or four weeks after fall of blossoms (3) Four weeks before fruit is ripe. Should weather turn damp and warm near ripening time, keep fruit well coated with spray
	Scab	Self-boiled Lime & Sulfur	8 lbs. of each	Spraying for Brown Rot controls Scab
	Leaf Curl	Dry Lime-Sulfur	12 to 15 lbs.	Either in fall after leaves drop or in spring before buds swell

Spray Calendar for Control of Insects and Fungous Diseases of Fruits, Nuts and Vegetables

—Continued—

Fruit or Nut	Insect or Disease	What to Use	Dilution to 50 gallons of water	When to Spray
Pear	San Jose Scale	Dry Lime-Sulfur	12 to 15 lbs.	In fall after leaves drop or in spring before buds burst
	Slug	Dry Arsenate of Lead	1 lb.	When slugs appear.
	Pear Psylla	Dry Lime-Sulfur	12 to 15 lbs.	(1) On warm days in November, December, March or April
	Pear Thrips	Nicotine Sulfate	$\frac{1}{2}$ pint and $2\frac{1}{2}$ lbs.	(1) When first buds begin to open (2) At the fall of the blossoms
	Pear Leaf Blister Mite	Dry Lime-Sulfur	12 to 15 lbs.	In fall after leaves drop or in the spring before the buds burst
	Pear Blight	No Spray remedy		Cut out and disinfect
	Scab	Dry Lime-Sulfur or Bordeaux Mixture	3 to 4 lbs. 3 lbs. lime 3 lbs. blue-stone	(1) When the leaf-buds are unfolding (2) Just before flower-buds open (3) At the fall of the blossoms
Plum	San Jose Scale	Dry Lime-Sulfur	12 to 15 lbs.	In spring before buds burst
	Cureulio	Dry Arsenate of Lead Lime	1 to $1\frac{1}{2}$ lbs. 2 to 3 lbs.	(1) Just before blossom-buds open (2) At fall of blossoms (3) A week or ten days later
	Gouger	Dry Arsenate of Lead Lime	1 to $1\frac{1}{2}$ lbs. 2 to 3 lbs.	Same as for Cureulio, except apply an extra spray before the bloom
	Brown Rot	Dry Lime-Sulfur	1 to $1\frac{1}{2}$ lbs.	(1) Just before buds open (2) Immediately after blossoms fall (3) Ten days to two weeks later. If season is wet, spray every two weeks until month before picking time
	Leaf Blight	Dry Lime-Sulfur	1 to $1\frac{1}{2}$ lbs.	(1) Ten days after fall of blossoms (2) Three weeks later (3) Six weeks after fall of blossoms
Rasp- berry	Rose Scale	Dry Lime-Sulfur	12 to 15 lbs.	Late in winter.
	Anthracnose	Dry Lime-Sulfur or Bordeaux Mixture	3 to 4 lbs. 3 lbs. lime 3 lbs. blue-stone	(1) When new shoots are six inches high (2) When ten inches high (3) Just before blossoms
Straw- berry	Strawberry Weevil	Dry Arsenate of Lead	1 to $1\frac{1}{2}$ lbs.	When flowers are in the bud
	Leaf Roller	Dry Arsenate of Lead	$1\frac{1}{2}$ lbs.	A week after moths appear
	Slug	Dry Arsenate of Lead	1 to $1\frac{1}{2}$ lbs.	When the worm appears, when berries are half-grown
	Leaf spot	Bordeaux Mixture	3 lbs. lime 3 lbs. blue-stone	(1) Before blossoms open (2) Ten days to two weeks later
Orange, Grape- fruit and Lemon	Red Spiders and Mites	Dry Lime-Sulfur	3 to 4 lbs.	When spiders are numerous
	Brown Rot	Bordeaux Mixture	3 lbs. lime 3 lbs. blue-stone	During winter
Almond	California Peach Borer, Peach Twig Borer, San Jose Scale	See Peach		
	Red Spider	Dry Lime-Sulfur	3 to 4 lbs.	When mites appear
	Shot Hole	Dry Lime-Sulfur	12 to 15 lbs.	When buds are swelling
Pecan	Pecan Leaf Case-Bearer	Dry Arsenate of Lead Lime	1 lb. 3 lbs.	From the first of August to mid-September

Spray Calendar for Control of Insects and Fungous Diseases of Fruits, Nuts and Vegetables

—Continued—

Fruit, Nut or Vegetable	Insect or Disease	What to Use	Dilution to 50 gallons of water	When to Spray
Pecan	Pecan Nut Case-Bearer	Dry Arsenate of Lead Lime	1 lb. 3 lbs.	(1) Shortly after nuts set (2) A week or ten days later (3) Four or five weeks later
	Scab	Dry Lime-Sulfur Bordeaux Mixture	12 to 15 lbs. 3 lbs. lime "bluestone"	(1) In fall or spring (2) When buds open and twice more at two-week intervals
	Anthracnose	Dry Lime-Sulfur Bordeaux Mixture	12 to 15 lbs. 3 lbs. lime "bluestone"	(1) When trees are dormant (2) Two - week intervals thereafter, making two applications
	Mildew	Dry Lime-Sulfur	3 to 4 lbs.	Frequent intervals during season
	Brown Leaf Spot	Bordeaux Mixture	3 lbs. lime "bluestone"	Three summer applications at two-week intervals
	Walnut Aphis	Dry Lime-Sulfur Lime Nicotine Whale-Oil Soap	12 to 15 lbs. 25 lbs $\frac{1}{4}$ pint 1 lb.	(1) When trees are dormant (2) During summer when aphids are present
English Walnut	Walnut Aphis	Dry Lime-Sulfur Lime Nicotine Whale-Oil Soap	12 to 15 lbs. 25 lbs $\frac{1}{4}$ pint 1 lb.	(1) When trees are dormant (2) During summer when aphids are present
Aspara- gus	Asparagus Beetle	Dry Arsenate of Lead	6 lbs.	Leave every tenth row uncut and spray from both sides. Apply three or four sprays at frequent intervals
	Rust			Spraying of little value. Plant resistant varieties
Bean	Bean Lady-bird	Dry Arsenate of Lead	2 lbs.	When beetles and eggs appear
	Bean Weevil	Carbon Bisulfide	1 oz. to 100 lbs. of seed	Fumigate seed
	Anthracnose	Bordeaux Mixture	3 lbs. lime 3 lbs. blue-stone	While cotyledons or original seed parts are still on seedlings
	Blight			Plant healthy seed
Beet	Leaf Spot	Bordeaux Mixture	3 lbs. lime "bluestone"	Early in spring when plants are small
Cabbage and Cauli- flower	Cabbage Worms	Dry Arsenate of Lead Soap	1 lb. 5 to 6 lbs.	When worms appear. Force spray into center of the plants
	Cabbage Looper	Dry Arsenate of Lead Soap	1 lb. 5 to 6 lbs.	When worms appear, and force spray into center of the plants
	Cabbage Aphis	Nicotine Sulfate Soap	$\frac{1}{2}$ pint 2 $\frac{1}{2}$ lbs.	When lice first appear
Celery	Early and Late Blight	Bordeaux Mixture	7 lbs.	Spray frequently
Corn	Corn Ear Worm	Dusting Mix- ture	50 lbs. each of Sulfur Arsenate of Lead	Soon after silk appears and every week until corn is picked
Cucum- ber	Striped Cucumber Beetle	Bordeaux Mix- ture Arsenate of Lead	3 lbs. lime 3 lbs. blue-stone 1 lb.	Spray frequently to repel beetles
	Wilt			Disease carried by Cucumber Beetles. Therefore, keep beetles away from vines
Egg- plant	Flea Beetle	Arsenate of Lead	7 lbs.	Frequent applications
Musk- melon Canta- loupe	Striped Cucumber Beetle	Same as for Cucumber		
	Wilt	Same as for Cucumber		
	Rust			Plant rust-resistant varieties
	Aphis	Nicotine Sulfate	$\frac{1}{2}$ pint	When lice appear. Spray underside of leaves
Onion	Thrips	Nicotine Sulfate Soap	$\frac{1}{2}$ pint 2 $\frac{1}{2}$ lbs.	Spray frequently in crotch of plants
	Smut	40% Formal- dehyde	3 pints	Apply as drip at seeding time
	Mildew	Bordeaux Mixture	3 lbs. lime "bluestone"	Spray frequently

Spray Calendar for Control of Insects and Fungous Diseases of Fruits, Nuts and Vegetables

—Continued—

Fruit, Nut or Vegetable	Insect or Disease	What to Use	Dilution to 50 gallons of water	When to Spray
Pepper	Rot	Bordeaux Mixture	3 lbs. lime 3 lbs. blue-stone	Spray two or three times during fruiting season
Potato	Colorado Potato Beetle	Dry Arsenate of Lead Paris Green	1 to 2 lbs. 2 lbs.	When eggs hatch and thereafter until insects disappear
	Flea Beetle	Arsenate of Lead Bordeaux Mixture	1 to 2 lbs. 5 lbs. lime 5 lbs. blue-stone	Spray frequently as repellent
	Aphis	Nicotine Soap	$\frac{1}{2}$ pint 2 $\frac{1}{2}$ lbs.	When lice appear
	Scab	Corrosive Sublimate	4 oz. to 30 gals. of water	Soak uncut potatoes for 30 minutes
	Black Scurf	Corrosive Sublimate	4 oz. to 30 gals. of water	Soak uncut potatoes for 30 minutes
	Late Blight	Bordeaux Mixture	5 lbs. lime 5 lbs. blue-stone	Begin when plants are six inches high, and thereafter at ten-day intervals until four or five sprays have been applied
	Early Blight	Same as for Late Blight		Begin when plants are six inches high, and thereafter at ten-day intervals until four or five sprays have been applied
Squash	Striped Cucumber Beetle	See Cucumbers		
	Squash Bug	Nicotine Soap	$\frac{1}{2}$ pint 2 $\frac{1}{2}$ lbs.	When young bugs appear
Sweet Potatoes				Sweet Potato diseases are not controlled by spraying but by (1) Disinfecting of seed. (2) Seed selection. (3) Rotation
Tomato	Tomato Worms	Dry Arsenate of Lead	1 to 1 $\frac{1}{2}$ lbs.	When worms appear
	Leaf Spot	Bordeaux Mixture	3 lbs. lime 3 lbs. blue-stone	At setting time and two-week intervals up into picking season
	Wilt			Not controlled by spraying
	Blossom-End Rot			Not a disease. Due to lack of moisture

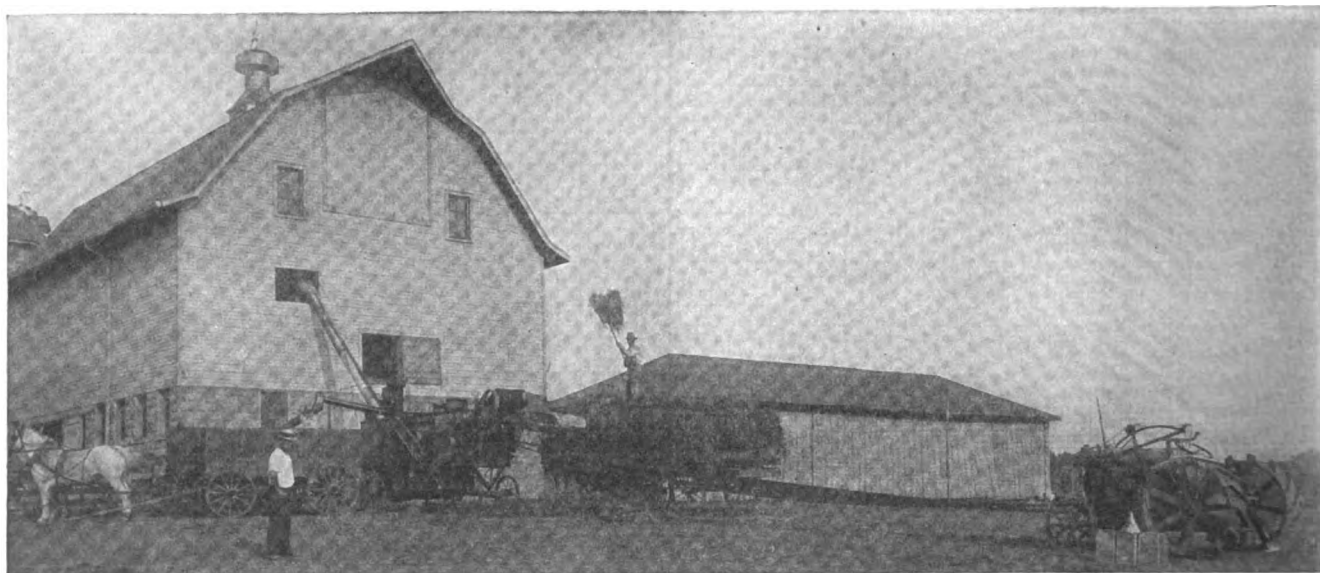
Best Methods With Alfalfa

DELAYING the cutting of alfalfa until it is nearly in full bloom has been found a better practice than mowing it soon after blooming starts. Trials made by the United States Department of Agriculture and state agricultural colleges indicate that the yields are larger over a period of years, and that the life of the stand is prolonged by delaying harvesting until the plants are nearly in full bloom.

Hay made when the plants are nearly in full bloom possibly is not quite so palatable, but this is offset by the gain in quantity of hay. The fields that were cut prior to or at the beginning of blooming showed a tendency to die out sooner. Cutting a crop late in the fall so that not enough growth was left for protection in the winter also had much to do with thinning stands. It is recommended that alfalfa be given time to reach a height of 6 to 8 inches before cold weather shuts off the sap flow.

In the past the growing of alfalfa in rows in dry regions has been recommended, but experimental evidence gathered in the last few years show that, with the exception of a few rare varieties the seed of which sells for a high price, this method is seldom practical. Where the rainfall is not sufficient to grow alfalfa in broad cast stands it cannot usually be grown profitably in rows. A slightly larger yield may be produced, but not enough to pay for the added expense. Also the hay harvest on this cultivated ground is apt to be dirty and it is hard to cut and load.

Accumulating experience also has exploded some old notions about the value of cultivation of broadcast stands. It has been found that harrowing a field of alfalfa ordinarily does not increase the yield; neither does it prolong the life of the stand to any noticeable extent. Some sort of cultivation appears advisable in irrigated regions where the water carries a great deal of silt or where the soil has been compacted.



Threshing Time on the Modern Tractorized Farm, the Tractor Furnishing the Power for the Separator, the Straw Being Blown into the Barn and the Grain Spouted into the Wagon.



In Harvesting the Peanut Vines Are Pulled or Cut and Stacked Around Poles with the Pods Out. They are thoroly dried before picked.

Peanuts Promote Prosperity

The Lowly Goober Returns the Farmer Many Millions of Dollars a Year and the Demand is Steadily Increasing

By EARLE W. GAGE

*Peanuts do not grow on trees,
They shun the sunshine and the breeze;
But grow and flourish underground,
And bring a stiffish price per pound.*

THAT IS the song of the American consumer, who has joined the chorus of the growers, who are reaping golden returns from their peanut crops, aside from having a valuable soil rebuilder to replace the former one-crop method. The production jumped from 34,000,000 bushels in 1916 to more than 50,000,000 bushels in 1919, and since then production and consumption have been increasing steadily.



Peanuts Are Cultivated in Much the Same Way as the Corn Crop.

It has been definitely decided that Noah had both peanuts and elephants on the Ark, and it is certain that no circus has been able to present a performance in recent times without "Fresh, hot peanuts," while the ball game and carnival would be a failure without these goobers. About 75,000,000 people of this country believe the nuts grow on trees; some 25,000,000 think that they are produced on bushes, and the remainder know peanuts are grown under the sod, like potatoes. In fact, peanuts are merely peas backwards, they developing in pods under the soil instead of on top.

The ease with which the crop may be produced, linked with the fact that a large line of modern mechanical implements are available for the production of peanuts, has been responsible for its replacement of cotton and tobacco, both crops of which demand 90 per cent hand labor in their production. The labor has not been abundant, and the soil was going out under the century of one-cropping. Peanuts not only replenished the soil thus depleted, but they gave the grower a profit beside, and prosperity reigns today where poverty formerly lurked between the cotton rows.

Peanuts have a more varied use in the food program of man and beast than possibly any other crop grown in the South today. Whether roasted or converted into oils, the basis of vegetable fat products, or sold in the form of delicious confections, the demand is great. Then, too, the high protein content of the vines form the basis of a valuable roughage for all manner of live stock. The leaves and nuts are also valuable as poul-

Peanuts Profitable

try food. Thus, the formerly lowly peanut has become king in several places. And those who know the true status of the industry advise that the ground has just been scratched, as regards the future possibilities of this crop.

The machines now used for planting peanuts are similar to the one-horse cotton-planter. The land is laid off in rows one way by means of a marker; the planter is run in this mark and it drops, covers and rolls at one operation. A gear wheel regulates the distance.

The same cultivation tools are used as for corn. Shortly after planting the field may be gone over with a weeder or light harrow, to loosen the surface and destroy weeds. The two-horse riding cultivator, with special teeth, follows, after the plants are larger the spring tooth is changed for shovel teeth. The one-horse five-tooth cultivator is also very popular, as the size of the shovels can be increased as the crop becomes larger, but the two-horse machine is best adapted where large acreages must be cultivated.

The crop is harvested by lifting the vines from the ground with the pods attached and then stacking them around small poles to cure. Proper harvesting and curing is the most important part of producing peanuts. A special digger is used, with more clearance than the potato digger, the object being to leave as much of the vine as possible in the soil, yet removing the nut-bearing pods. These vines fertilize the soil, and are very valuable in rebuilding the rundown lands, as well as maintaining fertility of better soils.

This machine is so regulated that the sharp point of the digger will cut off the roots just below the peanuts, carry the vines with the pods attached up over the elevator device, and deliver them on the ground behind the machine with practically all of the soil



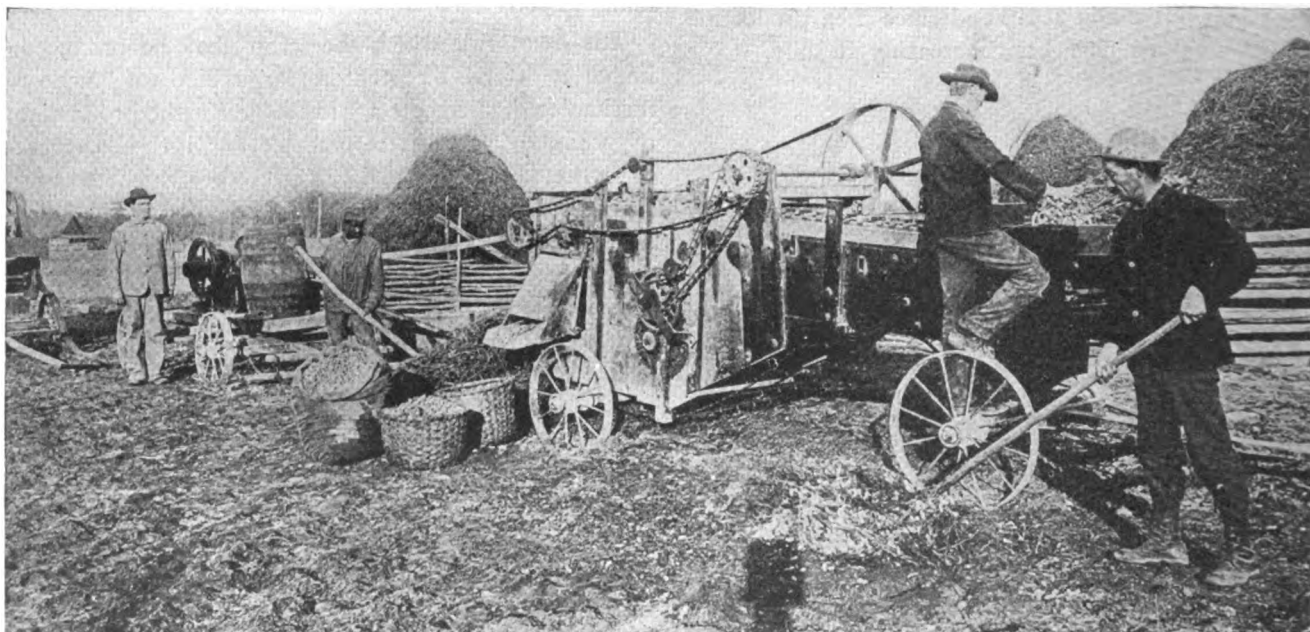
Digging Peanuts. This machine gets under the nuts in the ground and takes them out, but leaves the roots below for soil improvement.

shaken off. This outfit will harvest from 10 to 15 acres per day.

A crew follows the digger and piles the vines around posts, where they remain until cured and thoroly dried. Formerly peanuts were picked from the vines only by hand, and of necessity, production was limited to the labor market ratio. But recently there have been developed machines which pick the pods from the vines. These peanut-pickers are of two types, one having a cylinder like the ordinary grain thresher, and the other a picking mesh of diagonally woven wire.

The nuts drop thru the wire mesh and are removed by rubber brushes attached to an endless chain. The machine also has a cleaning and stemming device which removes the dirt and small stems. This picker does not break or injure the pods, but its work is rather slow. It is best adapted to handling the larger variety of nuts.

Since the ordinary grain thresher breaks the pods,



The Peanut Picker Has Revolutionized the Industry, Making It Possible to Produce Large Acreages. The machine picks the pods from the vines, emptying the nuts in the shells into baskets.

It's here at Last !



What It Does

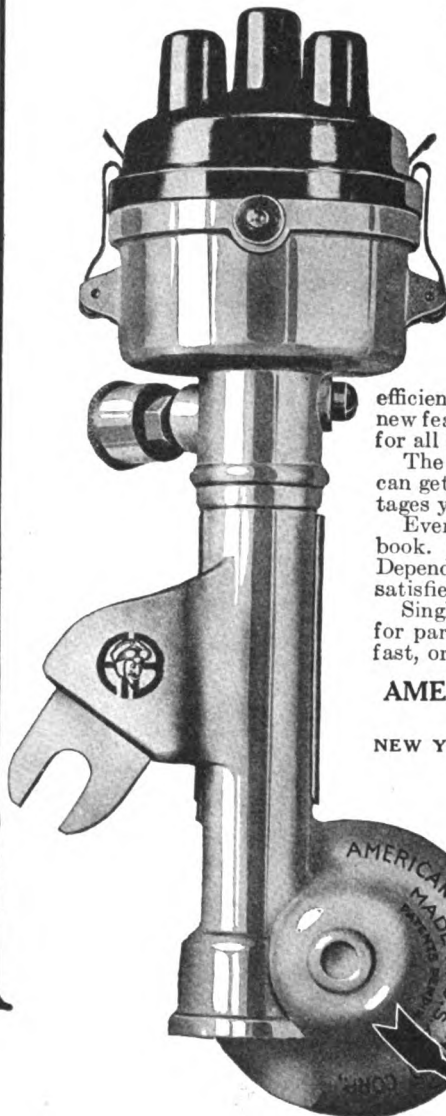
- 1 Makes Starting Easy
- 2 Keeps Plugs Clean
- 3 Prevents "Bucking"
- 4 Gives More Power
- 5 Saves Gas and Repairs
- 6 Banishes Timer Troubles
- 7 Pays for Itself
- 8 Stops Short Circuits
- 9 Reduces Vibration
- 10 Spark Lever Unnecessary

A Revolutionizing Ignition System for Fords

**BIG INTENSE SPARKS
AUTOMATIC CONTROL**

**SINGLE COIL
WATERPROOF**

**MORE SPEED
MORE POWER**



What every Ford Owner has wanted — Every dealer needed

Here's the world beater for 1923. A new, startling revelation in ignition systems for Fords.

A Genuine Bosch Ignition System for Fords that banishes all Ford Ignition ills in one sweep, for only \$12.75.

Here's the biggest value ever offered Ford owners—a wonderful new ignition system—big, rugged, dependable, efficient, waterproof—with automatic spark advance and many new features not found in any other ignition system. It's suitable for all Ford models—anyone can install it.

The sales opportunities are remarkable—the new business you can get—the added profits you can make during 1923 are advantages you can't afford to overlook.

Every Ford owner will want one—the price fits his pocket book. The Bosch reputation is the guarantee for Quality and Dependability—money back if you or your customer is not satisfied.

Single and quantity prices—a new Sales Plan. Write or wire for particulars—Don't miss this! If you are anxious to work fast, order five—immediately.

AMERICAN BOSCH MAGNETO CORPORATION

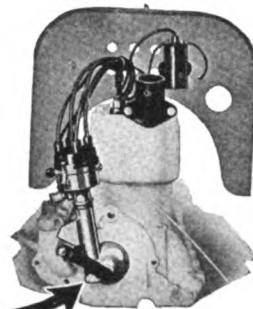
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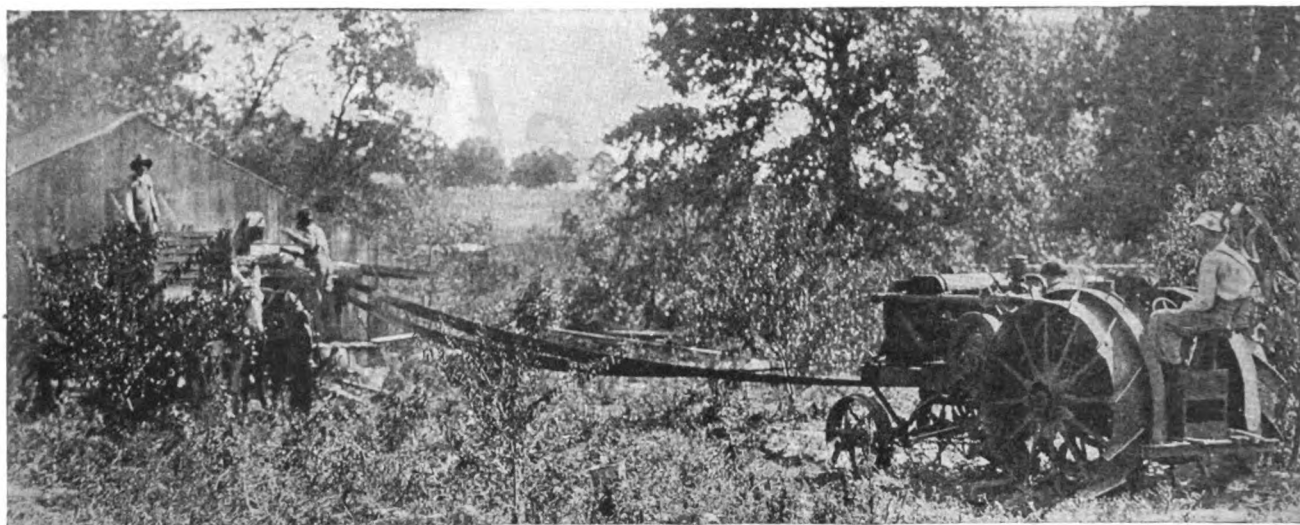
SAN FRANCISCO



The new **BOSCH-FORD** ^{\$}**12⁷⁵**
IGNITION SYSTEM

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

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Tractor Threshing Outfit Such as Is Used by the Growers of Large Acreages.

the new peanut thresher has been perfected. This is a cylinder machine which has been constructed especially for handling peanuts, and when properly operated this machine removes the pods from the vines with scarcely any loss from breakage and it removes practically all of the sand and grit. While essentially a peanut thresher, it may be readily adjusted to handle grains.

As peanuts come from the picker they contain some dirt and rubbish and require cleaning and grading before they are marketed. The farmer who produces Spanish peanuts on a large scale may profitably operate a small cleaning and shelling outfit, thus keeping the refuse material on the farm, but in communities where the industry is extensively developed, the cleaning factory has become an important and necessary factor.

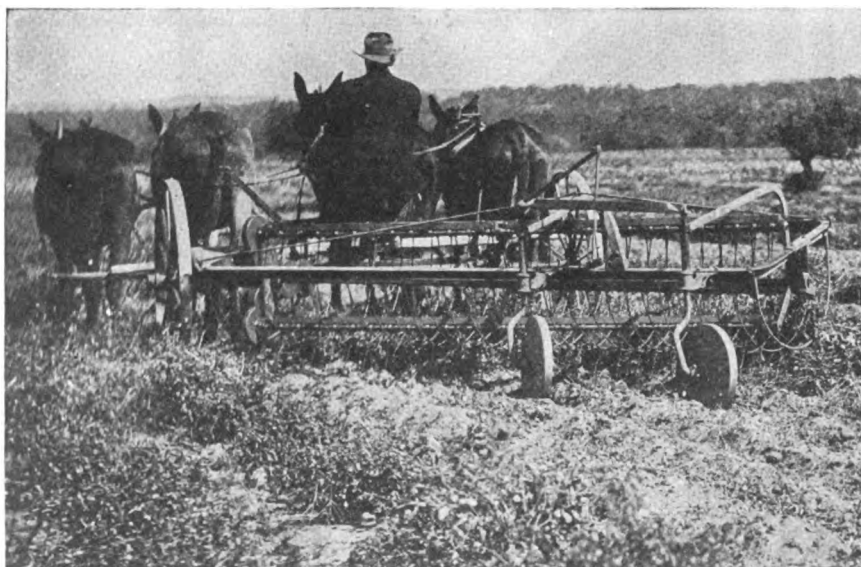
As to the possibilities of the peanut crop as a return-maker for the farmer, where judicious and practical

methods are pursued, let us consider the case of J. J. Collins, of Procter, Texas. Mr. Collins lives in a section that is the cream of the peanut industry of the Lone Star State. From 40 acres in peanuts he shows figures which demonstrate a profit of a little over \$6,000, the figures being as follows:

Yield, 2,000 bus.; sold at average of \$3 per bus.....	\$6,000
In ground, hog feed, 300 bus. at \$1.50.....	450
Damaged hay, 40 tons at \$10.....	400
	<hr/>
Cost seed, per acre at \$2.50.....	\$ 50
Planting, per acre, 50c.....	20
Cultivating at \$3.....	120
Harvesting at \$3.50.....	140
Threshing at 15c per bus.....	300
Hauling at 10c per bus.....	200
	<hr/>
Total cost	\$830
Production	\$6,850
Less cost	830
	<hr/>
Profit	\$6,020

Mr. Collins did exceptionally well in an average production of 50 bushels per acre on a field of 40 acres, since production thru the peanut belt fluctuates anywhere from 15 to 60 bushels.

The peanut is a valuable soil building crop. In common with other legume plants, it has the power of collecting the free nitrogen of the air thru the bacteria which live in the little nodules on the roots. This collection of nitrogen not only accelerates and increases the growth and yield of the crop but some excess of nitrogen is stored in the nodules and in the roots which serve to enrich the soil, provided the main portion of the roots is left in the soil at digging. When the crop is pastured with hogs, this fertility is largely retained.



After the Peanuts Have Been Dug, They Are Raked into Windrows and Then Gathered and Placed about the Stakes to Dry.

Ford Cars Are Not Made to Chatter

WHEN they do they are not properly lubricated. There is no chatter to a Ford when En-ar-co (Light) Motor Oil is used and kept at the correct level; the crank case drained, flushed and refilled with fresh, clean En-ar-co Oil every 500 miles.

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SCIENTIFIC REFINING
MOTOR OIL

THE OIL OF A MILLION TESTS

In making En-ar-co Oils we average over a million tests a year. It is only by this multiplying of tests that perfect products can be made. This thoroughness in our Scientific Refining processes is the protection offered to users of our products.

Why En-ar-co Motor Oil is Better

All refiners make lubricants just as all cooks make biscuits, yet there is as much difference in oils as there is between the delicious light, flaky biscuits mother makes and the heavy, soggy apologies for biscuits some restaurants serve. In each case the raw materials are practically the same, but the "making" is different.

To protect and safeguard your motor, use En-ar-co Motor Oil in your auto, truck or tractor. It contains no sediment-forming impurities. It is always uniform in excellence.

En-ar-co Motor Oil is sold by thousands of dealers everywhere. If your dealer cannot supply you, write us for price list and nearest shipping station.



Look For This Sign

Dealers Write us for particulars regarding En-ar-co Boy and Slate Sign and our unique sales and plan on En-ar-co Motor Oil

THE NATIONAL REFINING CO.

705-E3 National Bldg. Cleveland, Ohio

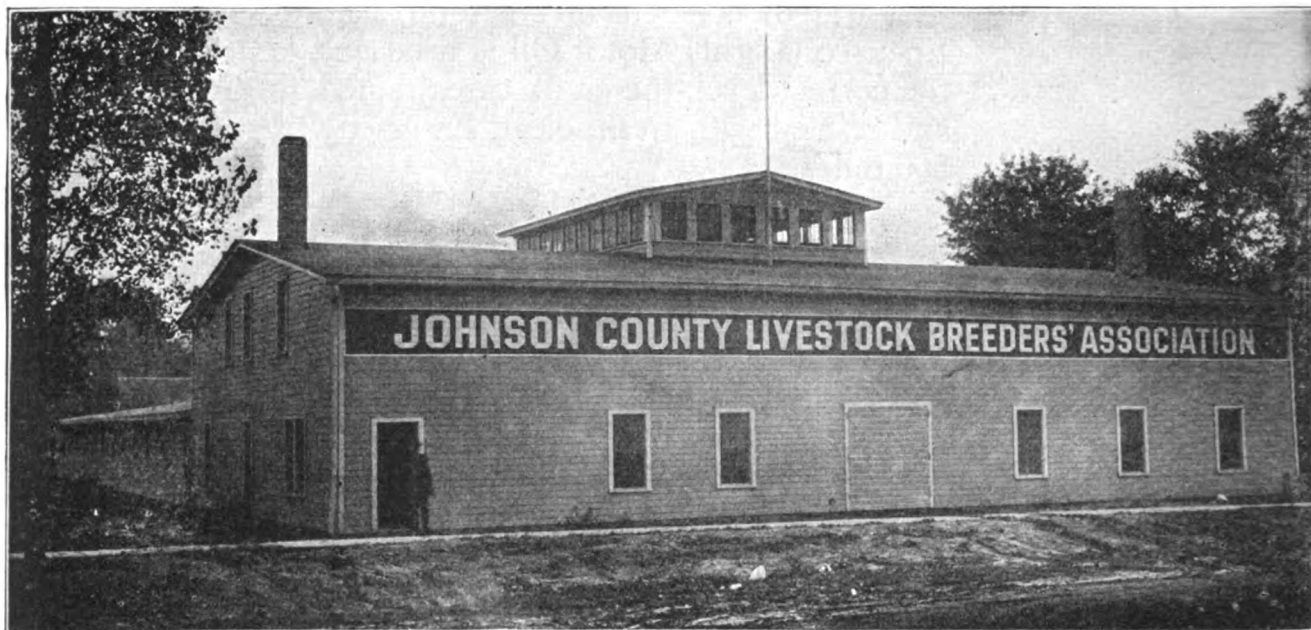
Scientific Refining—In Business 40 Years

Producers of Crude Oil, Refiners and Marketers—Four Modern Refineries—Complete Distributing Branches in 96 Cities

Livestock Sales Pavilion a Success

Co-operative Scheme Among County Breeders Results in Erection of Pavilion for Better Selling of Livestock

By H. J. METCALF



The Sales Pavilion at Iowa City, Ia., Where Johnson County Breeders Hold Their Sales.

A \$20,000 sales pavilion has been completed at Iowa City, Johnson county, Iowa, and a finer monument to the industry and progressiveness of a community could not be imagined.

In the fall of 1917 the farm bureau of Johnson county organized a pure-bred breeders' association, with the one idea of rendering every possible assistance to the breeders of Johnson county. While the war put a damper to active work along organization lines the spirit which prompted the organization and the need for it did not die. In the fall of the first year of war, when the Shorthorn breeders of the county held a consignment sale, they discovered that there was a great need for a sales pavilion, and at once started the movement which later resulted in this splendid building.

A prospectus was issued by the association, which read as follows: "Whereas, it has been decided by a general meeting of the farmers of Johnson county, Iowa, to organize and incorporate, in the usual form, an association of persons, to be known and designated as the 'Johnson County, Iowa, Livestock Breeders' Association,' for the purpose of erecting a livestock sales pavilion at Iowa City, Iowa, and for the purpose of conducting sales of livestock therein.

"The capital stock of the said incorporation shall be \$15,000, divided into 300 shares of \$50 each; \$10,000 of this stock to be subscribed for at once and the remaining \$5,000 to be retained as treasury stock, same to be sold later at the direction of the board of directors of the said corporation."

There was no difficulty in disposing of the stock and there now is every possibility that the investment will pay in ample returns.

Since the erection of the pavilion a large number of successful sales have been held. The association reorganized and is now known as the Johnson County Livestock Breeders' Association. This was done so that no discrimination might be made against breeders of grade livestock within the county who desired to purchase shares in the pavilion.

A charge will be made to everyone using the pavilion for sales, \$2 per head for selling cattle or horses and \$1 for hogs and sheep. Every day that anyone uses the pavilion, before or after the sale day, he is required to pay a flat rate of \$2 per day rental. The building is located in the main part of Iowa City, two blocks from the Rock Island depot and within convenient distance of the Rock Island, Cedar Rapids & Iowa City Interurban freight offices, so it is advantageously located for shipping livestock in and out. The building, 80x150 feet, has a capacity in the barn section for between 100 and 150 head of horses and cattle. The arena, which is heated, has a seating capacity of 600 persons.

As a means of giving their pavilion and various breeds of stock publicity the association contracted for advertising space in one of the Iowa City daily papers. A splendid edition of 80 pages was issued by the paper and every breeder in the county was represented.



**Automatically
Regulates Mixture
By Magnetic Force**

**More Power—
More Pep—Better
Combustion—More Speed**

**Actual Test Runs With
Various Cars and Trucks
Reveal Astonishing Re-
sults.**

**Gasoline Mileage Increase
Was From 30 to 90% Over
Same Cars Not Equipped
With Air-Eater.**

**Will Pay For Itself in 60
Days—in Decreased Gas
and Oil Consumption.**

**Air-Eaters have been successfully tested
on these trucks:**

BROCKWAY... 1 TON	FORD TRUCK
REO SPEED WAGON	NASH TRUCK
REPUBLIC... 1 TON	—AND OTHERS

**Send us the name of your truck for
further information.**

The Air-Eater is an inexpensive, automatic, electrical device that is easily installed in any motor car or truck equipped with generator. It costs nothing to operate or maintain, and will last the life of the car or truck. It will pay for itself in 60 days, in the saving of gas and oil.

The Air-Eater is controlled by the speed of the engine. It supplies more air when more air is needed, thereby insuring the precise mixture required in order to get the greatest efficiency from the motor. It is absolutely automatic—it is not operated by hand.

The Air-Eater makes the engine run smoother, gives more power; hence more pick-up and speed. It has been tested under various conditions for two years and found correct.

The Air-Eater also prevents carbon formed by too rich a mixture.

The Air-Eater is made of high grade materials, by experienced workmen, in a modernly equipped plant. It is fully protected by U. S. and foreign patents.

MONEY BACK GUARANTEE

Our dealers and agents are instructed to refund your money after 10 days' trial, if the Air-Eater does not do all we claim for it and prove satisfactory in every way.

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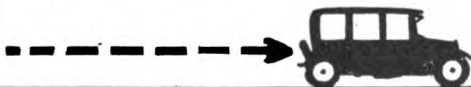
We are also making an exclusive proposition to AGENTS and DEALERS. Send today for territory offer and testimonials.

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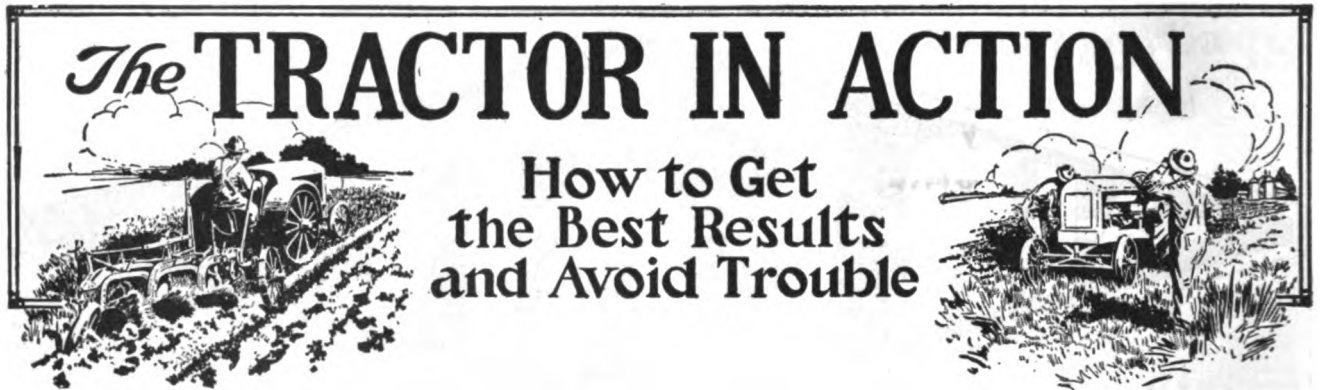
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INCREASES GASOLINE MILEAGE 30 to 90%



This department is for tractor owners. It is designed to be helpful to those who want to get the best results from their tractors and avoid some of the troubles that come when the tractor operator lacks experience. If you, as a tractor owner and operator, have found a way to overcome some specific trouble or have discovered some method of operating the machine and the implements it draws that will aid other tractor owners, send it to this department. \$1.00 will be paid for each letter printed. Address Editor FARM MECHANICS, 1827 Prairie Ave., Chicago.

For Economical Seeding

THE development of power farming equipment still goes on. One of the latest devices is a seeding attachment which can be connected directly to a spiked-tooth harrow, thus making a superior combination for seeding and covering of grasses and legumes at one operation. The attachment is made in various lengths so as to fit two, three or four section harrows and can be used equally effectively with any one. The power for operating the seed-hole agitator is derived from two wheels, one at each end of the machine. The whole machine is built close to the ground to prevent scattering of the seed by the wind.

Combining farm operations so they can be conducted simultaneously is a very effective way of reducing the cost of crop production. Progressive farmers will readily recognize the value of the new machine and will undoubtedly find it of great advantage.



Air Strainers on Tractors

SOME tractor owners do not seem to realize that every attachment on a standard machine is put there for some purpose. No manufacturer would spend money for an air strainer, for instance, if without it the tractor could live out its full expected life and at the same time give satisfactory service.

Observations made during the past year show that on many a trac-

tor the air strainer or clearer was not in working order. No tractor engineer that we know of has been able to design an engine that will successfully resist the scoring and excessive wearing action of dust on the walls, piston rings, valves, bearings and, in fact, all the inner working parts of the engine, and probably never will be able to do so.

The tractor owner should thoroly understand that better operation and increased life will result from keeping the air cleaner working. It is not at all an unusual thing for a tractor to suck in several pounds of dust, per day, thru the intake if it be not equipped with an air strainer.



"Two Cycle" and "Four Cycle"

THE terms "two cycle" and "four cycle" as applied to internal combustion engines are erroneous. They should be "two stroke cycle" and "four stroke cycle."

A two stroke cycle engine is one in which the four essential features of power development in an internal combustion engine are accomplished in two strokes of the piston. In the four stroke cycle engine it requires four strokes to cover the four factors, one stroke for each one. The mixture is drawn in on the intake stroke, compressed on the compression stroke, burned one the power stroke and scavenged on the exhaust stroke. In the two stroke cycle engine the events of



At Threshing Time the Tractor Becomes a Power Plant for the Thresher. Many tractor owners have their own outfits and can thresh when the crop is ready, a great advantage.

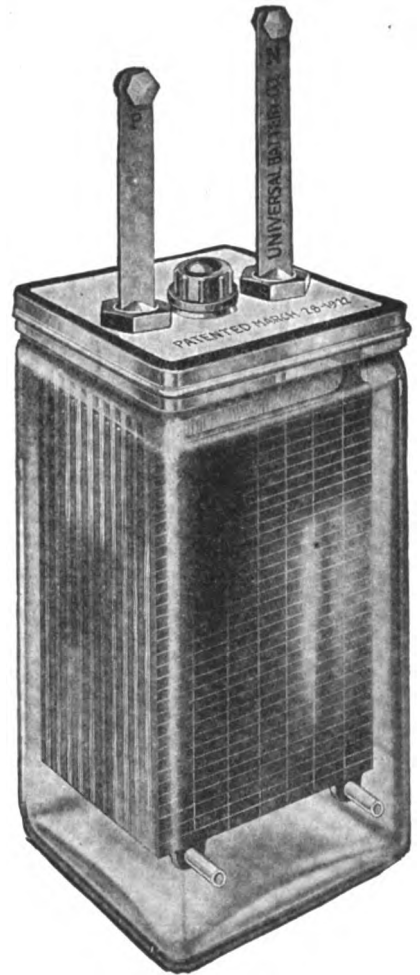
The Universal Cell for Farm Light Plants

When you replace your Light and Power Plant cells, get long life and steady service. Universal cells have hard plates—porous enough for speedy power generation. Yet hard enough to stubbornly resist disintegration.

Universal cells reach you ready to connect. No assembling—no complications. And a liberal allowance can be given you on your old, spent batteries. Universals are the original SEALED GLASS CELLS. They have extra sediment space—you never need to clean a Universal cell throughout its life. Twenty years of building long-life batteries are behind every Universal—whether it be for Farm Light, Automobile, Electric Vehicle, Radio, Telegraph or Telephone.

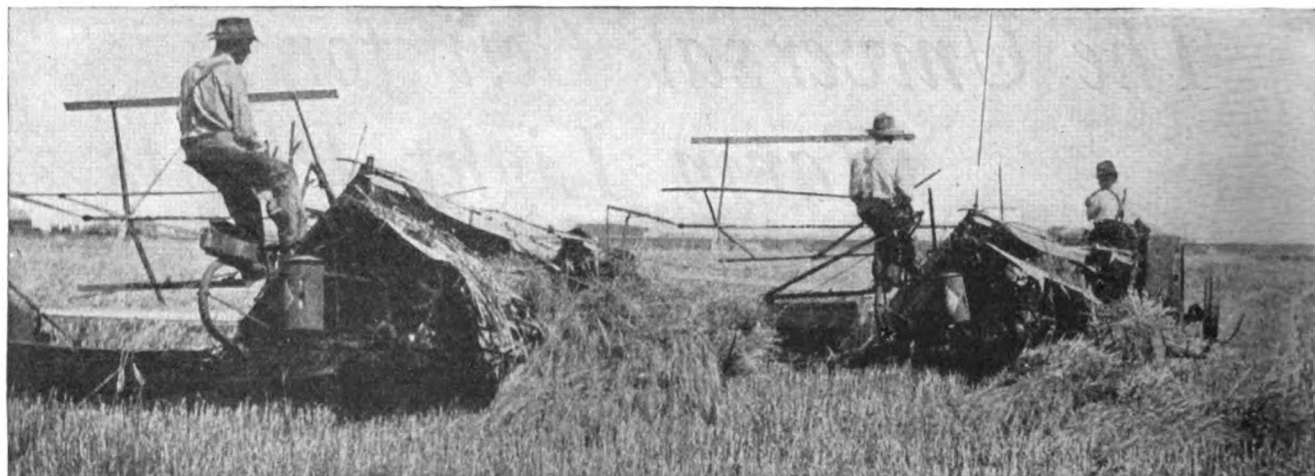
Universal wants you to weigh the evidence. Whether you want to replace cells now or six months from now, we want you to have a copy of our BATTERY GUIDE at once. It tells you how to renew your system. It gives interesting information on battery parts. When you write for it, we will send you a leaflet that may save you many dollars—"The Care of Batteries."

Pick up a pencil—write down your name and address—send it to us. Don't wait for a better opportunity to write. We will mail you the Guide and leaflet at once.



UNIVERSAL BATTERY CO. • 3410 S. LA SALLE ST. • CHICAGO





The Tractor Hitched to Two Self-Binders Takes the Place of Two Teams, Besides Working Longer Hours and More Steadily Than Teams.

expansion, exhaust and admission occur during the same stroke of the piston.

The two stroke cycle engine has fewer valves, less weight and greater frequency of power strokes, but it is not so economical in fuel construction and not so reliable as the four stroke cycle engine. It has the advantage, however, of requiring only a very simple mechanism to be made to run in either direction, consequently two stroke cycle engines are in common use for marine work where a quick reverse is necessary. For stationary purposes and for driving automotive vehicles and tractors, the four stroke cycle engine is to be preferred on account of its reliability and economy.



Use Little Oil, But Oil Often

SEVERAL of my neighbors operating tractors equipped with high speed four-cylinder engines are finding that they can save considerable oil and get a better running motor by using less cylinder oil at a time and putting it in more often. The practice of filling the crankcase twice a day with as much as it will hold means that if there is plenty at the start there is none too much at the end of the half-day. If there is all the oil that is needed at the end of the half-day there must have been too much when it was filled. Dirty engines and spark plugs are the result of using too much oil, and burned out bearings are the result of using too little. Too much oil seems to leak out more.

The time that it takes to keep this oil level even is not over 10 minutes a day. Putting in cylinder oil three times in half a day ought to be plenty, while some operators only oil twice in one-half day. This gives the pistons an even amount of oil to dip into each time they come around, but does not give them too much.

From observation I believe that a good many tractor operators, even myself, are using too rich a mixture in the carburetor. Especially should this be watched in tractors which burn kerosene. I have operated tractors from time to time after the owner has been on

the seat and have found that I could thin the mixture considerably and still get as much power and pick up as the way it had been set. The same is true in most automobiles. Some drivers forget this and many do not care; then, too, there are a good many who do not know what they can save in trouble and fuel by cutting down the mixture to the last notch. Also different fuels require a different mixture. Recently I lent my car to my man who filled the tank with a higher test gas than I had been using. I noticed today even on a short drive that I could turn the adjusting screw much farther than I ever could before and that the car started more easily than it used to.

Extension rims are being used here more than they were at first. The soil in this section runs to a sandy loam, some spots being quite sandy, and on these little knolls one sometimes finds that the pull on the drawbar is a little more than the wheels can get a grip to handle. So, of course, the tractor immediately "digs in" and that means time wasted or lost. A tractor placed recently on a nearby farm had trouble handling two plows without the extension rims, but after adding the 8-inch extension rims the outfit handled the work easily.

Experienced drivers know that it does not pay to wait for a wheel to dig in very far. Just as soon as this happens the operator should throw out the clutch and try some other way. I was driving a 20-horsepower tractor a few days ago and got into trouble of this sort. After the first experience I procured a 12-foot log chain and extended the hitch so the tractor was ahead of the soft spots. Then I was able to pull out easily. Of course, it means uncoupling and backing up again, but at that it saved more time than it would have taken had I tried to wear the dirt down to a solid place.—O. Q. H.

✦
O. C. BRYAN AND E. B. FRED, of the Wisconsin College of Agriculture, report that cowpeas and soy beans both decline markedly in growth whenever an excess of either acid or alkali is added to the soil.

Leader

Equipment for Water Air & Oil

Water System There are over 100,000 users of Leader Tanks and Leader Equipped Water Systems. These are installed in cottages, country homes, country estates, country clubs, dairies, poultry farms, stock farms and in all districts where city water supply is not available.

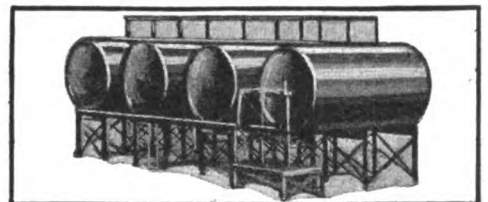
For over 20 years Leader engineers have specialized in Water Supply problems. Many dollars have been saved buyers by taking advantage of the experience of this trained organization. The purchase of a Leader System, a good long-time investment. Use the coupon.

Bulk Station Leader Bulk Station Layouts are planned by Leader engineers. You can save money by getting their plans and suggestions on pumps, power, and oil storage requirements. Tank capacities from 25 to 25,000 gallons. Use the coupon.

Truck Tanks Leader can furnish truck tanks for any truck. But have stocks designed for Reo Speed Wagon, Harvester Red Boy and the Ford. Use the coupon.

Air Tank Leader Rivet-Weld Air Tanks are designed for filling stations, implement houses, factories or wherever air under pressure is required.

Small Service Tank Leader Kerogas Tanks and units are designed for oil storage, for road builders, factories and farms. Thousands of Leader Service Tanks are in use in filling stations and in homes for storing fuel oil.



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OF
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| <input type="checkbox"/> Water System | <input type="checkbox"/> Truck Tanks |
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Winter Quarters for Sheep

Unique Barn Planned to Keep the Flock Healthy and with a Minimum of Labor

By JOHN Y. BEATY

ONE of the most economical barns for handling sheep is on the farm of E. K. Warren, Three Oaks, Mich. In this barn one man is able to take care of 1,000 sheep without any assistance except at lambing time.

Photographs of the interior and exterior of this barn are reproduced on these pages, and you will find a floor plan, by which you will see that the barn, which is 400 feet long and 100 feet wide, is divided into 24 pens. All of the pens but two are 33 feet square. The alleyway between the two rows of pens is 33 feet wide, and may be divided into six pens by gates that swing together across the alleyway.

Each pen is provided with a large watering trough and with plenty of hay racks. The watering trough and one of the racks is clearly shown in one of the photographs, and you will see the type of construction.

These racks are made so that the seeds and dust from the hay will not get into the wool of the sheep, yet there is little danger of the sheep pulling the hay



A Closeup View of the Side of the Barn, Showing How the Windows Are Hinged So That the Barn May Be Well Ventilated.

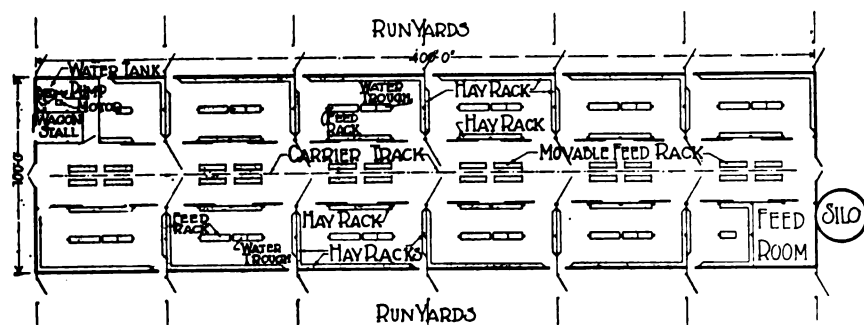
other. The water is supplied by a system of pipes; the source of supply is in a room at one end of the barn. An electric motor operates a pump that keeps a galvanized tank filled, and from this tank the water is drawn into the various pens.

A stall for the supply wagon is provided at this same end of the barn, and the room where the water tank and the pump is located also serves as a room for the men at lambing time.

The alleyway is provided with movable feed troughs, which are used only in the winter when the building is crowded. When the building is not filled to capacity, the sheep in the pens and along the side are fed in these movable feed

troughs in the alleyway. The feed is placed in the troughs and the sheep are then let out. This also gives the sheep needed exercise.

The building is made with a monitor roof, and, as



Floor Plan of the Unusual Sheep Barn on the Farm of E. K. Warren. This barn will house 1,000 sheep.

out onto the floor.

A watering trough and one of the hay racks is built in the center of the pen, with room at each end so that a wagon may be driven in at one side and out on the other. That is the way the mangers are filled.

You will notice from the floor plan that there are two gates, one at each end of each pen, so that a wagon may drive in at one end and drive out at the



Perspective of the Warren Sheep Barn, Showing the Monitor Roof Construction, the Almost Continuous Windows and the Silo That Supplies the Sheep with Feed During the Winter.

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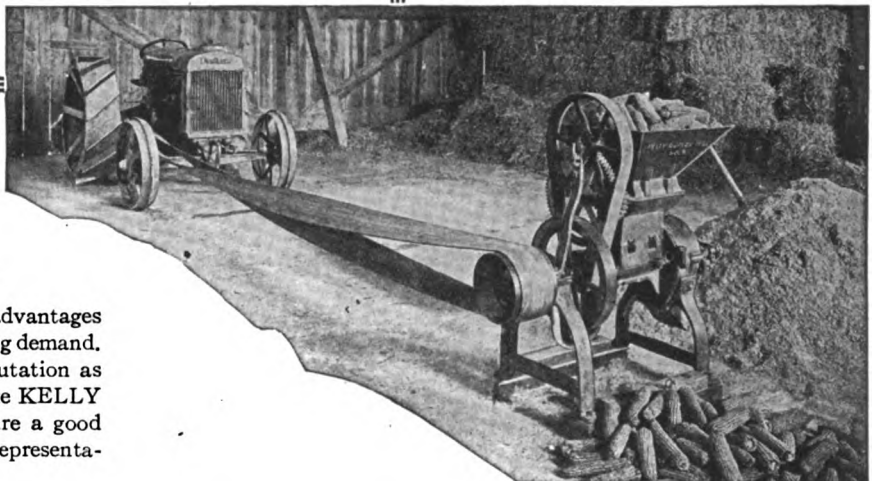
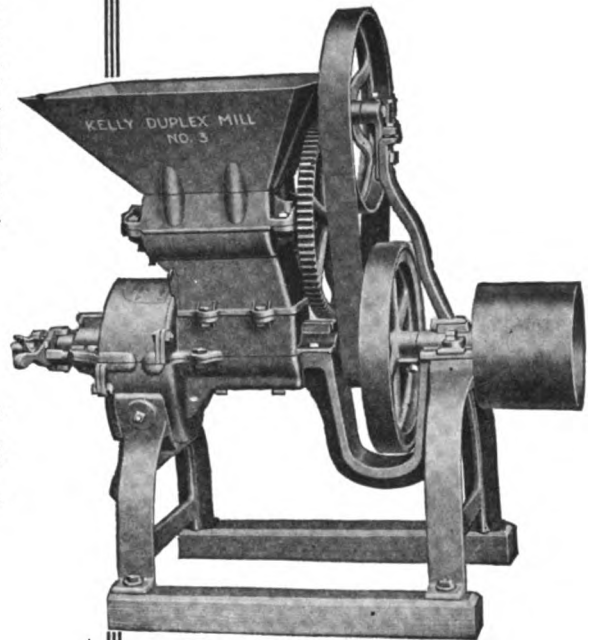
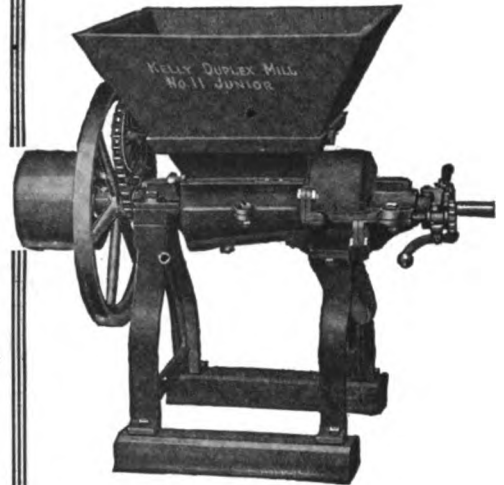
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WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

you will see from the photograph, has an abundance of windows in the monitor and along the side. These windows may be raised for ventilating, as is shown in one of the pictures reproduced on page 92.

There is a hay rack in the center of the driveway. This makes it possible to use the alleyway during the fall for storing hay. At haying time this alley is nearly filled and later on, when there is more time, the hay is baled where it is. By the time the sheep are put in for the winter, the alleyway has been cleared and we have plenty of room. At that time the alley appears as is shown in the photographs reproduced on this page.

This barn holds a lot of hay, because it is 30 feet to the gable and 20 feet to the lowest part of the roof.

This building saved its cost the first three years it was used. Ten per cent more lambs were saved with the building than were saved before. Then before, two men were employed instead of one, so a saving in the wages of one man was made each year. A saving of about 20 per cent on feed was made, because when the sheep are housed in a warm barn such as this, they eat about this much less.

The first winter this barn was used, only five sheep were lost out of 750, and that is a pretty low loss. Two of these were drowned, which, of course, was no fault of the building.

You will see from one of the photographs that there is a large silo at one end. This supplies plenty of silage for winter. The barn is completely equipped with electric lights, and an electric motor is used to pump the water.

This particular design has been tested for a good many years. The idea was borrowed from an old sheep breeder in Indiana.

This barn is located in a large pasture, and on one side of the building, individual lots are provided for each pen. The doors from the pens on the north side open into the big pasture. While this location is some distance from the main buildings, it was selected because it is located closer to the sheep pastures.



Sheep on Rape Pasture Made Cheap, Fast Gains

LAMBS on rape pasture gain weight more rapidly and cheaply than those on bluegrass pasture, according to results of trials conducted by the Kentucky Agricultural Experiment Station to determine the most profitable pasture for these animals. Other pasture crops for sheep that can be planted during the



Interior of the Warren Sheep Barn, Showing the Feed Racks in the Center. Gates spaced at intervals of 33 feet, making it possible to turn this space into pens.

next few months include soybeans, cowpeas, and Sudan grass.

Rape seeded in April or May will make early pasture, eight to ten pounds of seed being required an acre. This may be drilled or broadcasted. Many men who fit sheep for shows sow oats with rape at the rate of one bushel an acre thus making it possible to change the sheep gradually from green feed to dry feed and grain as the oats ripen, it is said. One acre of rape will carry from 10 to 15 ewes or from 15 to 25 lambs but should not be pastured until it is 10 to 14 inches high.

Cowpeas for sheep pasture are sown from May 15 to June 15 in rows 28 to 35 inches apart, about 48 pounds of seed being required an acre. This crop, which has a carrying capacity about the same as rape, is ready for pasture in September.

Soybeans also are seeded in rows like cowpeas but should be planted about 15 days earlier than the peas at the rate of 35 pounds of seed an acre. This crop can be pastured in September and will carry from eight to 15 ewes or 10 to 20 lambs an acre.

Altho not as desirable for sheep as soybeans, cowpeas or rape, Sudan grass makes an excellent catch crop or dry weather one to be used when the others fail. It may be sown in May or June at the rate of eight to 10 pounds of seed an acre and is ready for pasture in about one month. Last year, in eight weeks during which no rain fell, one acre of this grass furnished pasture for 20 sheep on the station farm. The animals were turned on the grass after it had been planted 13 days.



E. J. MAYNARD, of the Colorado Agricultural College, is conducting some interesting experiments in feeding beet crop by-products to fattening lambs.

Dollar Wheat!

REMEMBER the old days—when every grain grower looked forward to the time wheat would be worth one dollar a bushel? Now we have dollar wheat, with vengeance. But seemingly things aren't much better than they were.

Dollar wheat necessarily brought with it increases in other lines—higher wages, greater transportation charges, more expensive clothing and higher-priced farm machinery.

The farmer made money when his wheat sold for 70 cents a bushel. And he will make money on dollar wheat. But inefficient and wasteful methods must be eliminated.

The drive pulley on farm-power machinery is only a small item. But it is a mighty important item when it decreases the efficiency of a machine or hinders the farmer in his work. Dollar wheat won't permit belts that slip or pulley coverings that rip and tear and come loose when the farmer has work to do.

Progressive manufacturers today are equipping their machines with Rockwood, *The Drive Pulley*. And Mr. Farmer will be looking for just such indications of value when he buys new machinery next year.

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Rockwood, *The Drive Pulley*, consists of a solid block of tough wear-resisting fibre (seldom less than two inches thick) built around and into a heavy cast iron hub. The end-grain is exposed as a surface to grip the belt surely and firmly—a surface made up of layer upon layer of fibre hydraulically compressed and cemented—a surface that renews itself automatically as it wears and **WEARS**.

Rockwood, *The Drive Pulley* has no "cover" to strip. It is ALL pulley and is thoroughly waterproofed.

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ROCKWOOD, PULLEY SERVICE

Is the Barn Well Ventilated?

If Frost Collects in the Stable, the System Is Not Correct—It Will Pay to Change It

By R. U. BLASINGAME

A SINGLE cow will breathe out about a gallon of water in the form of vapor in twenty-four hours. This moisture will be carried out of the barn if a good circulation of air is provided by a ventilating system. If the moist air remains in the barn it will condense on walls, ceiling and any other objects in the barn which are cooler than the air. Harness decays in moist air, hinges, latches, steel barn equipment and other hardware will rust under such conditions. And worse than this, disease germs grow fast and multiply rapidly under moist conditions.

A barn may have ever so much sunlight and disinfectant may be used frequently, but if the foul moist air is not removed cattle, hogs, horses, and other animals will not be healthy and strong.

Correct ventilation not only brings more milk from dairy cows, puts added weight on fattening stock, protects the stock from tuberculosis, but gives longer service from the building and equipment in it.

In order to secure fresh air circulation thru the barn or hog house it is necessary to provide air-intakes along the sides and ends of the building and foul air out-takes from the stables extending above the roof. Every one is acquainted with the barn ventilator on the roof. These "aerators" are so designed that when the wind blows an upward movement of air is secured. This natural force draws the foul damp air out of the barn and in its

place fresh air enters the intakes shown at Fig. 1. Registers or "dampers" ought to be provided at the inlet and outlet flues in order to control the ventilation.

Fig. 2 shows a complete ventilating

the equipment and installs the system.

The late Dr. H. P. Armsby and Max Kriss, director and associate, respectively, of the Institute of Animal Nutrition, the Pennsylvania State College, prepared a

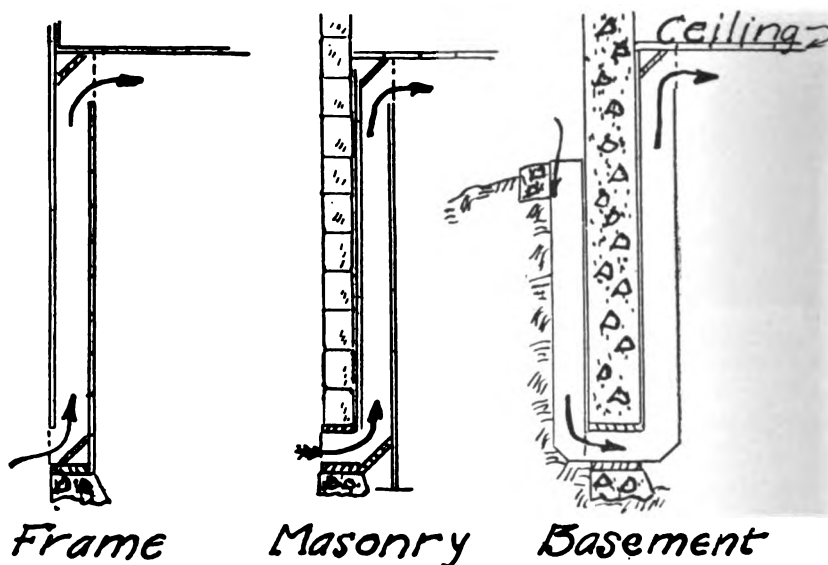


Fig. 1. Cross Section Showing How Fresh Air Intakes Are Constructed.

system. This system was designed by one of the companies making ventilating equipment. It is not best practice for the layman to design his system. There are so many factors entering into the proposition that expert engineering advice is absolutely necessary. Such service is furnished by the company, which builds

paper in 1920, "Some Fundamentals of Stable Ventilation," which furnishes definite data showing the production of heat, carbon dioxide, and moisture by typical farm animals.

This work of Dr. Armsby was undertaken upon the initiative and with the co-operation of the chairman of the Committee on Farm Building Ventilation appointed by the American Society of Agricultural Engineers. This committee conducted nineteen tests during the winter of 1920 and 1921; three of these tests in horse barns, one in a hog house, two in barns with mixed stock, and the remainder in dairy barns. These tests were made in North Dakota, Minnesota, South Dakota, Michigan, and Massachusetts.

It is difficult to control the temperature in the stable when window intakes are used. When wall intake ducts are provided the windows can be kept closed, the sashes fitted tightly in the frames and storm windows provided for barns in cold climates. When window intakes are used this means of controlling the stable temperature cannot be employed without restricting the amount of ventilation. When the cold incoming air passes over the sash it cools the panes of glass and the warm moist air coming in contact with the cold glass condenses and with low temperatures forms a frost. When the temperature is just enough to cause condensation, but not frost, water runs

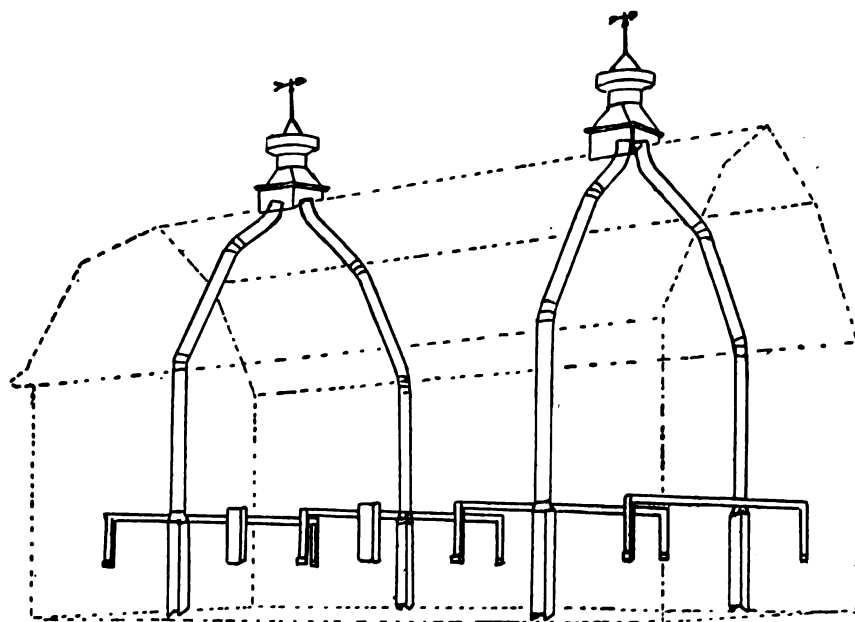
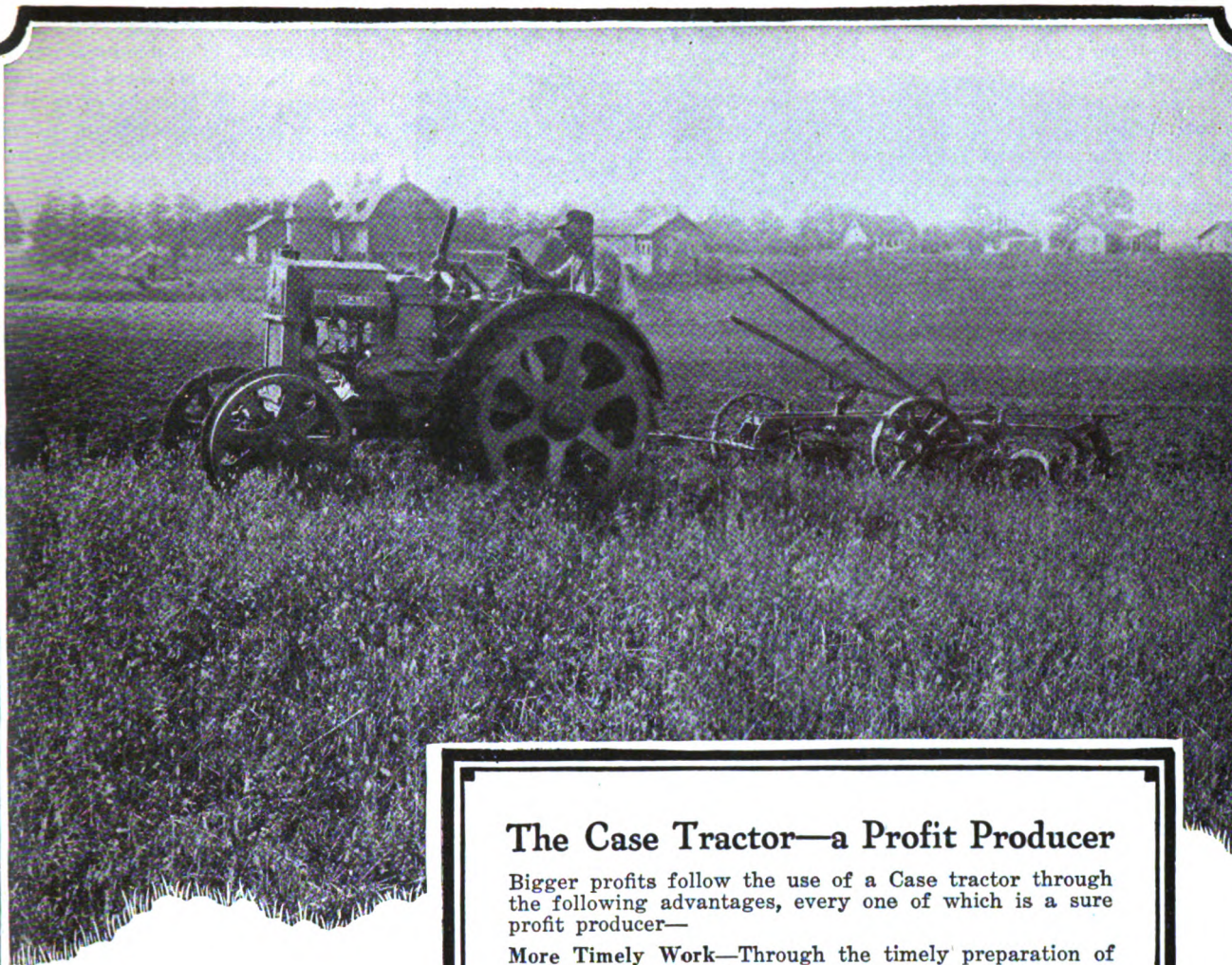


Fig. 2. Skeleton View of Dairy Barn Showing How the Foul Air Flues Follow the Wall and Roof Lines to the Suction Ventilators.



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All working parts are fully enclosed, protected from the harmful effects of dust and dirt, and are positively lubricated. A patented Case air washer keeps dirt out of the engine cylinders.

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Better Farming—By deeper plowing and more intensive working of the land, Case owners raise crops of better quality, bringing higher prices and bigger profits.

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down the sash, rusts the hinges at the bottom, if they are used, and rots the sills and frames.

The area of intake openings has an important bearing upon the maintenance of stable temperature and it was possible in most of these tests to control the barn temperature by varying the amount of inlet area. The out-take area usually has a greater influence upon the amount of ventilation secured than does that of the intakes. Openings near the floor in the out-takes appeared more favorable to the maintenance of stable temperature than ceiling openings. Especially was this true during cold weather. Storm windows aid in maintaining the stable temperature. Where the leakage of air thru cracks, doors, windows, etc., is excessive, it is impossible to maintain a uniform temperature in the barn, and variations in temperature inside follow closely that of the temperature variations outside.

It has been the experience of a great many livestock men that the excessive moisture of stable air causes the coats of animals to shed prematurely and is detrimental to keeping their coats in good condition. It has also been the experience of dairymen that with dairy cows which partly shed on account of excessive moisture in the stable air where the temperature was too warm during the fall there was a marked falling off in milk production when cold weather came.

Correct ventilation is just as necessary to the good health and maximum production of animals as food and water.



Brightening the Way of the Traveler

NEXT to smooth, hard-surfaced roads the most pleasing thing to the traveler is a well marked road. Perhaps we may paraphrase the late Senator Ingalls' famous saying about the egg, making it "a doubtful road is a bad road even if it is a good road." That may be an exaggeration, but a trip is shorn of much of its pleasure when you are continually in doubt as to whether you are headed for Timbuctoo or Halifax.

But should you decide to venture in among the rolling hills, lakes and tall timber of Wisconsin you need have no fear of losing your way, even tho you have left your compass on the clock shelf. The Badger state has been mending her ways in the care of roads and in providing for the convenience of those who use them. Not only are the highways kept in such good condition as to attract the attention of road officials from neighboring states, but these lanes of travel are as easily followed by the stranger as by the native who uses them every day or so.



Sign Warning Travelers of Railroad Crossings.

The Wisconsin road law provides rather explicitly for the marking and signing of the roads in various ways. A series of standard signs and markers has been adopted. Each trunk highway has been given a number beginning with 10 and now reaching to 125. The standard design of the marker is triangular in shape and the number of the highway is always placed within this triangle. The state highways have been selected so as to extend as far as possible so as not to mutilate the number of different routes. No. 10 is the longest, extending from Beloit on the

southern line to Superior on the lake of that name. The numbers you will see on the post or board just below the point of the triangle refer to the distance from the beginning of that particular highway. North and south roads are considered to have their beginning at the south and those running east and west start in the east. On these state highways there is a mile post at the end of every mile. Sometimes separate posts are put up and sometimes the marks are stenciled on telephone poles or other objects conveniently located. The route number is for the convenience of the traveling public, while the mile numbers are useful largely to road workers in making reports and plans for road maintenance.

In addition to the mile posts there are danger signs at railroads, bad hills, sharp curves and at schools. The particular kind of danger is indicated on the sign.

Wherever a road crosses a county line there is a county-line signboard which contains the highway number, the names of the counties on either side and the names and addresses of the county road commissioners. Usually there is an additional board on the post on which is painted the numbers of the adjoining patrol sections and the names and addresses of the patrolmen. These patrol section signs appear at all the division points between the various sections. If a traveler runs across a bad piece of road he can easily see just who is responsible for it. Wisconsin folks say this sort of publicity furnishes a stimulus to the patrolmen and also the commissioners to keep up the roads in the best possible condition. These signs also make it easy for the public to co-operate with the road officials in case of washouts or other accidents.

There also are direction signs along the highways directing travelers to towns along the state roads or to places reached by side roads. If the road by which the town is reached is not on a state highway the direction sign contains no number. Distances are given on all these direction signs.

Many of the counties in Wisconsin have adopted a secondary or county trunk system and these roads are marked in much the same way as the state roads except that the different trunk roads of the county are indicated by letters rather than by numbers. The State Highway Commission furnishes the counties with stencils containing the words, "County Trunk" and the desired letters indicating the various roads.

Men who have traveled over deaf and dumb roads will be ready to praise Wisconsin for what she has done to brighten his way.—C. E. GAPEN.



Hard to Go Wrong When the Roads Are Marked Like This

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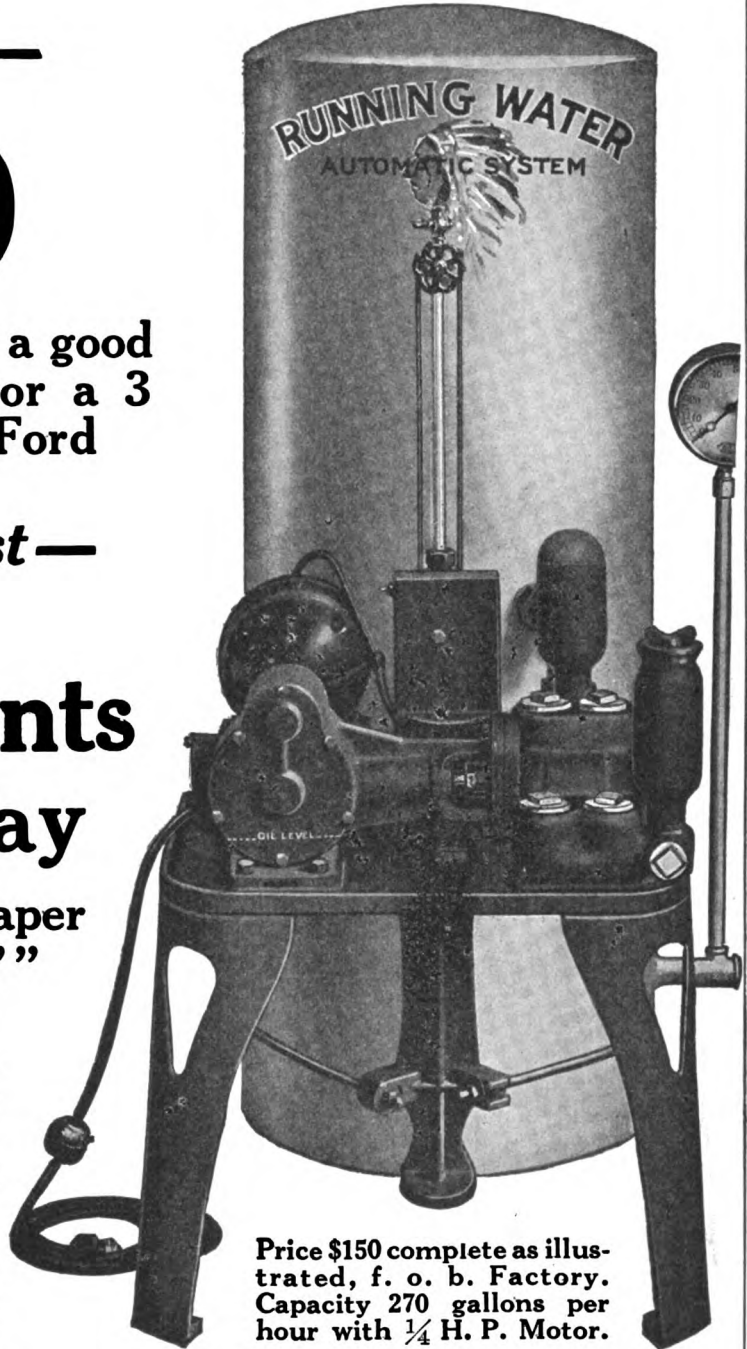
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A Practical Brooder House

The First Few Weeks Are the Hardest on the Young Chicks and Proper Care Will Save Many of Them Who Otherwise Would Die

By LLOYD LELAND STEWART

THERE is no phase of poultry raising on the farm that has been so hazardous, costly and discouraging as that part of the work of trying to raise a chick from the time it arrives from the shell until it is twelve weeks of age. It is the opinion of those who are acquainted with poultry statistics that not half of the chicks hatched in the corn belt ever reach maturity. Some places the average is as low as 35 per cent. Altho there are several reasons for this, by far the most important one is the lack of suitable brooding equipment. New and satisfactory brooding equipment and methods of raising chicks have been perfected which makes it possible to save a very large portion of the 50 per cent chick loss each year. These newer methods have proven that it is unnecessary to lose chicks and that they can be raised just as successfully as other live stock.

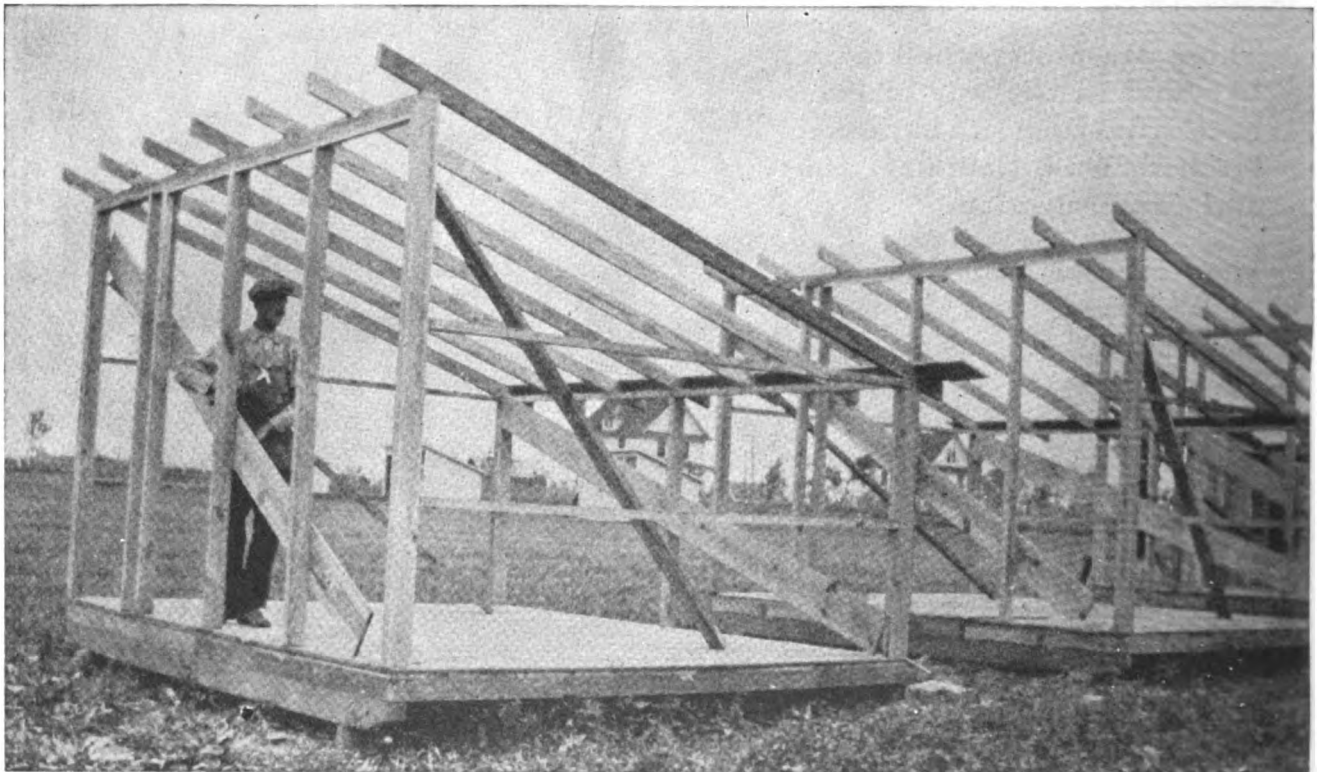
Along with proper feeding, they must have complete protection from varying temperatures and inclement weather, where they need not be crowded and can have plenty of fresh air. The requirements for brooding chicks easily and

successfully are a stove that will maintain a required and even temperature in any kind of weather and a house that is large enough to care for from 250 to 500 chicks as a maximum in one group, be free from drafts, with a warm floor with plenty of space so that the chicks can get away from the heat of the stove and can be comfortable, especially on those days when they must be confined inside due to bad weather. The house must be convenient so that a person can get inside and work around with ease, and the windows should be so arranged that it can be ventilated without causing the least drafts on the chicks. The lungs of the chick lie very close to the back and are inadequately protected with a light covering of down and for this reason are very susceptible to drafts which may cause pneumonia.

The poultry department at Iowa State College have designed a most practical and successful colony brooder. The framing of this house is shown in the illustrations. It is 12 feet wide and 10 feet deep. From 250 to 500 chicks can be successfully cared for in this house altho the former number is always rec-

ommended. The floors are double with a layer of building paper in between. This prevents dampness, cold and drafts from coming up thru the floor. The top row of windows are hinged at the bottom to swing inward. As the air enters the brooder it is forced upward over the windows. The six windows are arranged for proper ventilation and to allow in a maximum of sunlight which adds warmth and cheerfulness and destroys disease bacteria. The hinged door under the windows is most important. When the days are hot this door is opened and the house is made cooler by several degrees. The two ventilation systems, however, must not be confused. Floor ventilation which is necessary when the chicks are suffering with the summer heat would kill off the whole lot in early spring when they are small and the weather is cold and damp. An ideal brooder is one that will take care of both of these extremes.

The roof is covered with roofing paper and the house is built on heavy runners so that it can be skidded from place to place. Altho not shown thus in the illustration, the runners should extend at either end at least a foot



How the Brooder House is Framed. The runners should be a foot longer at each end than the house.

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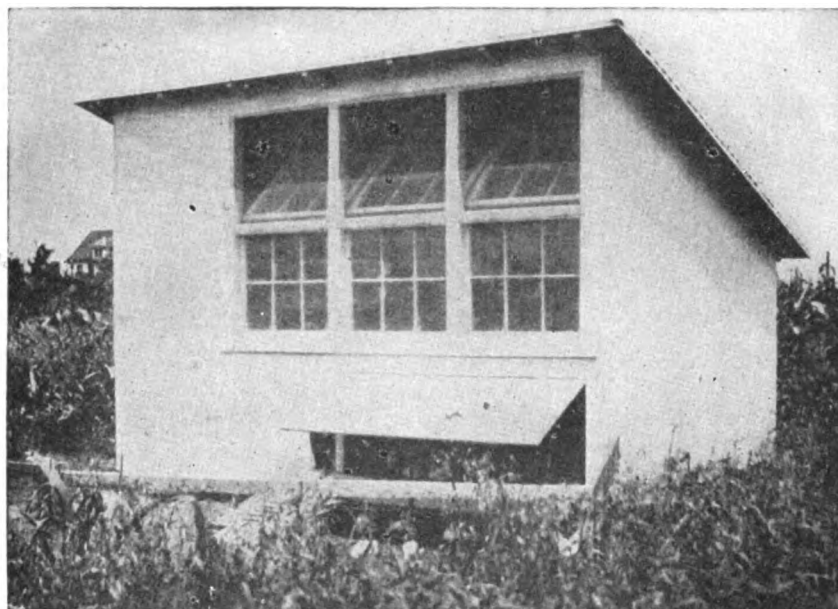
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The Brooder House in the Edge of the Oats Field. Here the chicks find fresh, clean soil, insects and worms, and they will not damage the grain

beyond the house. The roof is high enough from the floor that a person can work inside without fear of striking his head on the rafters.

The advantages of brooding chicks in a house like this are many. Two hundred chicks can be cared for with greater ease and in about the same time as a hen and her brood of fifteen. The chicks can be completely protected from varying weather conditions. The type of hover to be used in this brooder is a hard coal brooder stove with a metal deflector. These stoves will maintain the desired temperature in any weather which makes it possible to hatch very early in the spring. Early hatched chicks as a rule grow better, command a better price on the market, and the pullets lay earlier in the fall when the price of eggs is highest.

The house is large enough for the attendant to do all the feeding, cleaning and caring for the stove on the inside. Only a person who has had to get down on his hands and knees in the snow or in the rain to feed the chicks in a box brooder or fix the lamp can fully realize the value of the colony house brooder.

When the chicks are large enough, roosts are placed inside for them and the growing chicks continue to use the brooder house until the cockerels are sold and the pullets placed in permanent laying quarters. It can be used during the winter for twenty-five laying hens and is the ideal size for a breeding flock, special pens, or breeding cockerel houses. Unlike the small box brooders, fireless brooders, and coops that are soon outgrown, the use of the colony house is permanent. It is paying returns on its investment every day in the year. Perhaps its greatest financial

advantage is that it saves the greater part of the number of losses thru inadequate methods and equipment. That is more than enough in one year to pay for the colony brooder and its stove.



A Direct Current Power Chart

IT is not difficult to figure the horsepower of a direct current motor, knowing the amperes, volts, and motor efficiency if you can remember that there are 746 watts in a horsepower. That is a figure, tho, that is easily or often forgotten, and besides, it is usually torture to most of us to be compelled to divide by any odd number like 746. Multiplying is fairly easy, but dividing is work. In order to make the operation easier, therefore, this chart was developed.

Simply lay a straightedge across the chart and the horsepower is immediately found in column B.

For example, what horsepower is consumed by a direct current motor taking 80 amperes at 110 volts?

Connect the 80 (column A) and the 110 (column C) and the intersection with column B gives the answer as "almost 12 horsepower."

In the same way the horsepower delivered by a generator may be found, or, the chart may be used "backwards" for determining the amperage when power and voltage are known, or for determining the voltage when the other two are known.

Next it may be desired to know the horsepower developed by the motor. That is determined by multiplying the power consumed, as obtained above, by the efficiency of the motor.

The efficiency of motors, of course, is a variable quantity. The larger the motor the higher the efficiency, as a general rule. Small motors are usually inefficient. Let us assume that the efficiency of the above motor is 90 per cent. The power developed, then, becomes

$$12 \text{ hp} \times 0.90 = 10.8 \text{ hp.}$$

Inversely, the power delivered to a generator is determined. Thus, if the generator develops 12 horsepower, and if its efficiency is the same as that of the

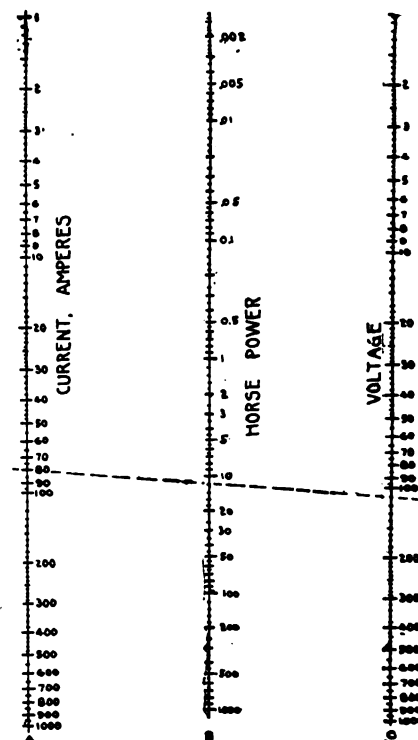


Chart Showing How to Determine Electric Power.

motor (90 per cent) we divide by 90 per cent and get

$$12 \text{ hp.} \div 0.90 = 13\frac{1}{3} \text{ hp.}$$

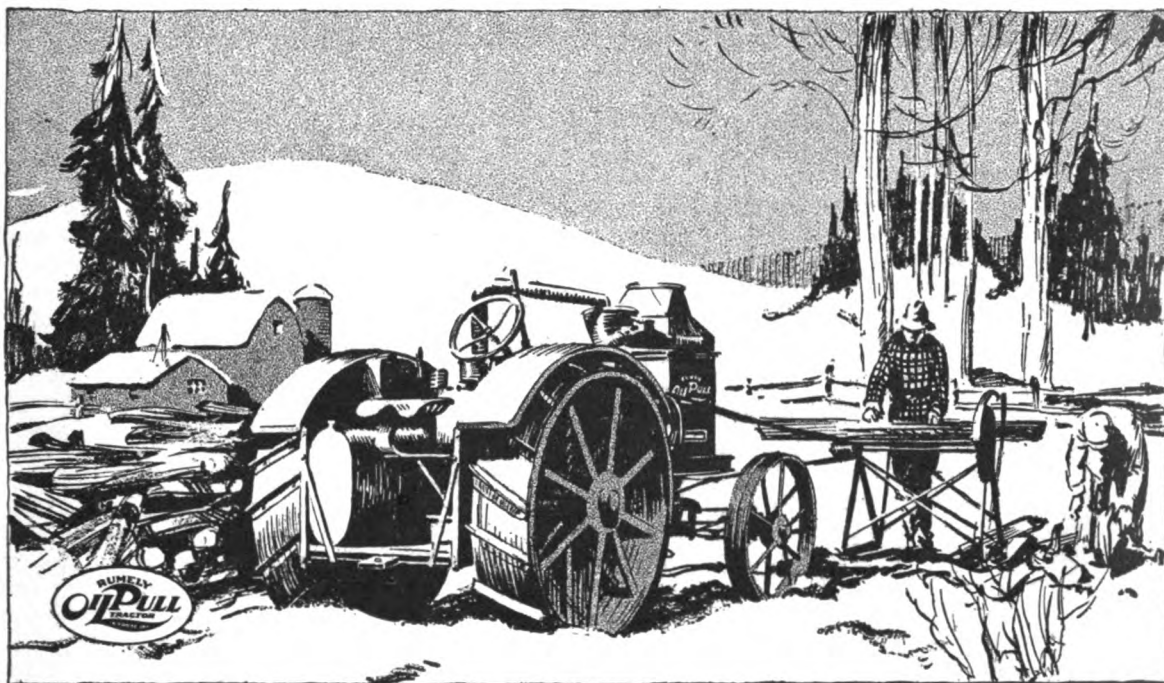
The range of the chart, it will be noted, is great enough to care for every ordinary direct current condition. The maximum value shown in column B is 1,000 horsepower, whereas the minimum is 0.0013 horsepower.—W. F. SCHAPHORST.



Pleased with Farm Mechanics

AS I am a rather new subscriber to FARM MECHANICS I thought I would send a few lines to let you know I certainly am very much pleased with the magazine. It certainly is well worth the small price you charge. I am a farmer. own two tractors, Fordson and Flour City, 30-50; also Dodge car.

I do all my repair work on the engine, also do considerable overhauling on my neighbors cars. I certainly am amused at some questions that are asked you in regard to motor trouble, but yet these boys are unfamiliar with these troubles, of course.—LEVI E. BALMER, Nauvoo, Ill.



"Easy to Start and Always on the Job"

"Always on the job." In these four little words in a letter of two convincing paragraphs, Christ Busch, sums up the OILPULL as users know it. Cold weather, hot weather; North, South, East, West, it is "always on the job." Easy to start. Never overheats. No refilling of radiator. Never freezes. Do you wonder that users continually write us about the wonderful service they get from their OILPULLS?

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Young Orchards, Hogs and Forage

Make the Acreage Devoted to Fruit Earn While the Trees
Are Coming to Maturity

By PAUL C. STARK

ONE of the first questions that comes up to the man planting an orchard is this:—How can I handle the orchard until bearing age, with least expense or even at a profit, and at the same time secure good growth on the young trees with a continuing up-building of the soil? The best answer to this question in my opinion, is the following: The right kind of crops between the tree rows and harvesting them with young pigs and shoats. By this method nothing is taken off the soil and it steadily becomes richer, particularly if legumes like cowpeas, vetch, clover, soybeans, alfalfa, and the like are used. By following this method, ordinary hill land can be planted to orchard and by the time the trees reach bearing age the soil is rich and capable of meeting the demands made on it by heavy fruit crops.

Most farmers and even some orchard men have the mistaken idea that land planted to young orchards must be idle and non-productive of profit for some years or until the orchard bears a commercial crop. If you can show a farmer or landowner that he can grow crops between the tree rows, harvest them with hogs and actually make a profit from the young orchard before it bears, you can show him the way to take advantage of a money-making opportunity that is far superior and more profitable than any other form of agriculture. Every observing landowner has seen many instances of \$75 or \$100 per acre hill land planted to orchard which later produced an average of \$200, \$300 or

more per acre over a period of years. If they will take the average *net income* from a well-cared for orchard, and figure the value of the orchard, it will stagger them.

These are the facts that are indisputable and with the tremendous decreases in the number of orchard trees as compared to 10 years ago as shown by the U. S. census it makes the outlook even more favorable for the future. With the decrease in bearing apple trees here in Missouri from 13,000,000 to 5,500,000 in only 10 years (and with big decreases also in the other states) it makes me feel that every one of my orchard trees is worth about 50 per cent more than my former valuation—and I valued them high at that time.

To get back to the subject of inter-crops, it has been claimed by some that corn should never be planted in the young orchard, because it kept the trees from growing. However, during the war as an emergency, orchardists were advised to grow corn in the young tree rows and now it is quite a general practice. When used right and not abused, it is a good practice. If the land is good enough to grow corn and the trees are frequently cultivated and the corn "hogged down" it gives good results. In my own orchard some of the best growth is where one or two crops of corn have been grown. At the last cultivation I sowed rye and vetch which makes the best winter pasture for pigs and hogs and the vetch being a legume, enriches the soil.

One reason why corn is a good inter-

crop for the farmer to grow in the young orchard is because the farmer knows he has to cultivate corn to get any crop—and at the same time, he cultivates the trees. The farmer's orchard in an uncultivated field is very often neglected in favor of other crops and the weeds check the young growth of the trees. I have seen a young orchard the first year after planting with corn as an intercrop, make two to four feet of growth while trees in uncultivated fields made only a few inches. However, it is advisable to follow corn with leguminous crops like soybeans, cowpeas, vetch, etc. When planting corn, leave three to five feet on each side of the tree row.

Our young orchards have had inter-crops ever since they were planted and we have harvested all these crops with pigs and shoats that we have raised on the place.

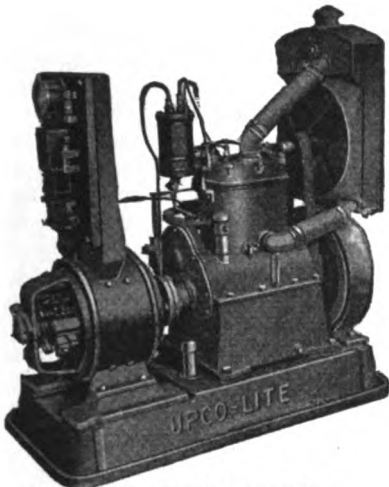
On most of our trees we have rabbit protectors made of tubes of heavy galvanized wire and these give some protection from hogs, altho in the field where no protectors were used, the hogs did no damage. Our experience has been that if the hogs were not confined and have plenty of green forage they won't bother the trees. If they are fed near young trees they may rub them some but this can be practically overcome by keeping pigs well oiled and by putting in some rubbing posts with oiled sacks tied to them. Keep oiling posts near entrance or just outside of orchard where hogs and pigs can go to them frequently. If possible, keep



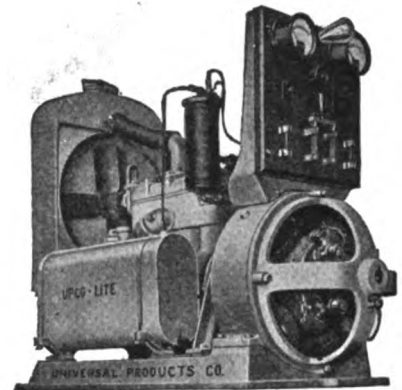
Growing Corn Between the Rows of Trees in a Young Orchard Is Now Considered Good Practice. The cultivation of the corn helps the trees, while the yield, especially if hogged down, gives a return from the land in advance of the orchard reaching a bearing age.



"A Size for Every Need"

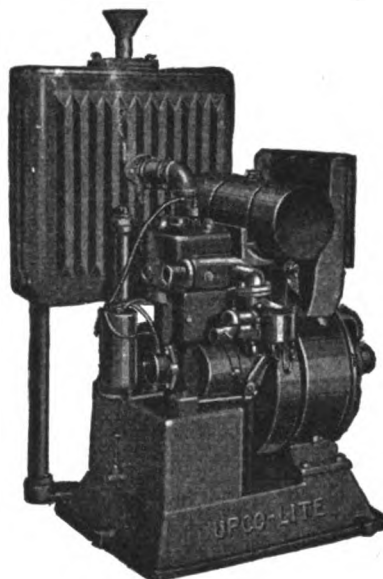


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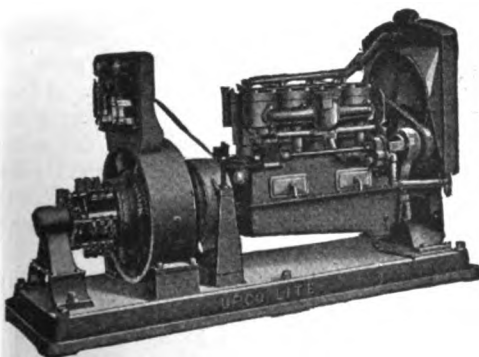
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on a customer and find
his needs require a size
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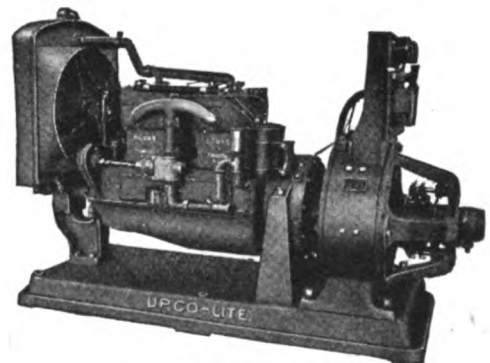


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This Apple Tree Is 18 Months Old. While it is growing cowpeas are raised between the rows of trees.

wallowing holes and water outside of the orchard as they tend to cause hogs to rub. If possible, arrange to let all the pigs and shoats run in large fields and leave a gate open so that they can go to water and can be fed outside of the orchard. Don't confine too many hogs in a small field. It is best to have fields at least 15 to 20 acres in size if large hogs are used. Pigs and shoats, even in large numbers, do not seem to damage the trees if not confined in a small field. If the owner is not prepared to handle his sows in the orchard, they can be kept elsewhere and the pigs and shoats allowed to run in the orchard. The wire protectors fastened by the special crimp method protects the trees well but if the hogs get to rubbing on them, it is advisable to have moss and paper stuffed in at the top so that it won't spring the protectors loose, otherwise the hogs rubbing or a cultivator hitting the protector, will spring it loose. Be sure to give the hogs sufficient salts or some other preparation advised for keeping them in good condition. We have kept our pigs and shoats rung so they would not root too much in the young orchards, however, in the older orchards, this rooting is a real benefit. Any wormy apples that drop will be quickly consumed.

In addition to corn, we have used successfully, vetch, cowpeas, soybeans, rye, rape, clover and alfalfa. All of the crops are splendid for raising young pigs and we have had splendid results from them. In all cases we cultivate a strip three to five feet wide on each side of the tree row and we cultivate very intensively, particularly early in the summer as that is the time we get most

of our growth. At the last cultivation, about August 15 to September 1, we sow rye and vetch in these strips on either side of the row. This furnishes a good cover during winter and prevents washing. In the spring, these strips are plowed under and cultivation starts again.

Now, as to the hogs, we have raised approximately 400 pigs in the past year. We have sold many as shoats, weight 80 to 120 pounds, in which case they



Showing the Corn Growing in the Young Orchard.

didn't consume much purchased feed. A considerable number were fattened and sent to market. We raised a considerable part of the corn needed and even considering the feed that we bought, our hogs made a mighty good profit—and this was a year that cattle and most farm crops brought little or no profit. In 12 months we have received from hogs alone approximately \$4,000 and we have on hand bred sows enough to raise as many pigs as last year.

Our experience in raising pigs on the forage crops in our young orchard has demonstrated to our satisfaction that it is profitable and satisfactory from an orchard standpoint. Our trees have made a splendid growth under this method of orchard management and in addition to this, we have the satisfaction of knowing that we are making the orchard pay a revenue and our soil is getting better every year. However, this practice like most any other practice, can be abused, and we would advise every orchardist who is going to follow this practice to study his conditions carefully and use every effort to see that the trees make the proper growth and are properly cared for.



Cull Fruit As Bad As The Robber Cow

NOW they are putting cull fruit in the same class as the boarder hen and the robber cow, and the fruit men at the New York State College of Agriculture are taking advantage of the fruit season just past to drive home to growers the futility of producing poor fruit which costs as much to pick, haul and sort as does the good.

The culls, they say, are a greater nuisance in the packing house than they are in the orchard, for they seriously cut down the daily pack at a time when speed counts.

Good apples do not just grow; they are worked and planned for. Attention must be paid to such things as growing the right variety suited to the soil and locality, proper pruning, correct cultivation, spraying and fertilization, and intelligent pruning. Many growers do not realize the value of thinning when there is a heavy crop on the trees, nor of using fertilizer or manure when needed.

Pruning must be moderate when the tree is young in order to encourage growth, size and fruiting wood, and as the tree gets older the pruning should be so distributed among the branches as to preserve the permanent limbs in a healthy condition and promote vigor in the fruit spurs.

Profits depend upon producing larger, better colored fruit, and more of it to the acre.

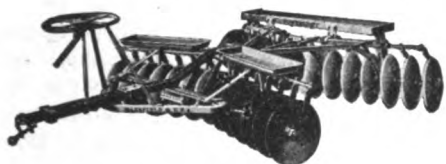
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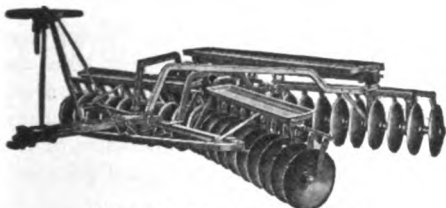


For Field, Orchard and Vineyard



Roderick Lean "Powershift" Tractor Disc

Built in 5, 6, 7 and 8 foot sizes, with 16 or 18 inch discs. For use with any standard 2 or 3-plow tractor. A tractor harrow in every sense, adjusted under draft of the tractor and entirely operated from the tractor seat.



Roderick Lean Automatic Tractor Disc

A larger harrow built for heavy duty work, with larger tractors having from 10 to 12 h. p. on the drawbar. Furnished in 8 and 10 foot sizes with 16 or 18 inch discs. Gangs adjusted under draft of the tractor. Operated entirely from the tractor seat.



Roderick Lean Vineyard and Orchard Disc

Adapted to all types of vineyards and orchards, and the only harrow of its kind. Furnished with 4, 5 or 6 discs to each gang. Reversible and extension. Gangs may be set in any position desired, to throw soil in or out. Adapted for cultivation of grapes, hops, loganberries, etc.

WHY limit the usefulness of your tractor by using inadequate horse implements behind it? Specialized power machinery not only pays and pays big, but is absolutely essential for best tractor results. Most horse implements lack the weight, strength and convenience of operation necessary for tractor use. Tractor manufacturers recognize this. Many of them recommend Roderick Lean "Powershift" Tractor Discs for good working results.

Farmers everywhere who have bought tractors have turned to Roderick Lean to supply them with the proper tillage implements. In these harrows are combined all the features necessary to long life of the implement, thorough work in the field, and convenient and economical use with the tractor. There is a size and type for every tillage requirement of field, orchard and vineyard, and a size for every tractor.

If you are a tractor owner, or consider the purchase of a tractor, you are entitled to receive the facts about the leading tractor harrows. Write us today, stating size and make of your tractor and name of your nearest dealer.

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Also builders of a complete line of horse disc harrows, spike and spring tooth harrows, walking and riding cultivators, single and double row. Catalog furnished on request.

BUILDERS OF GOOD HARROWS FOR FIFTY YEARS

How the Farmer Is Financed

The Federal Farm Loan Association and the Federal Farm Loan Banks
and How They Are Organized

By IVAN WRIGHT, University of Illinois

(Author of *Bank Credit and Agriculture*, *American Farm Mortgage Credits*, etc.)

THE Federal Farm Loan Act became a law when approved by President Wilson July 17, 1916. The Act provides for a special system of banks to handle long-term mortgage credits. The purpose of the act is best stated in its preamble, as follows:

"An Act to provide capital for agricultural development, to create standard forms of investment based upon farm mortgage, to equalize rates of interest upon farm loans, to furnish a market for United States bonds, to create government depositories and financial agents for the United States and other purposes."

This specialized system of banking is an outgrowth of the complaint of the unequal opportunities of farmers to use finance in the operation of their business with other business men. In other words, it is an endeavor to obtain for the farmer financial equality. Two systems of banking are provided for in the Act—the Federal Land banks and the Joint Stock Land banks. In this article we will consider only the Federal Land Banks. The succeeding article will take up the Joint Stock Land Banks.

The Federal Land Banks. There are twelve Federal Land Banks, as provided for in the original Act. These twelve banks are located as follows: Springfield, Mass.; Baltimore, Md.; Columbia, S. C.; Louisville, Ky.; New Orleans, La.; St. Louis, Mo.; St. Paul, Minn.; Omaha, Nebr.; Wichita, Kans.; Houston, Tex.; Berkeley, Calif.; and Spokane, Wash. In locating the banks, the greatest precaution was taken to locate

them according to the respective needs of the country and at points which are easily accessible from all parts of the respective districts.

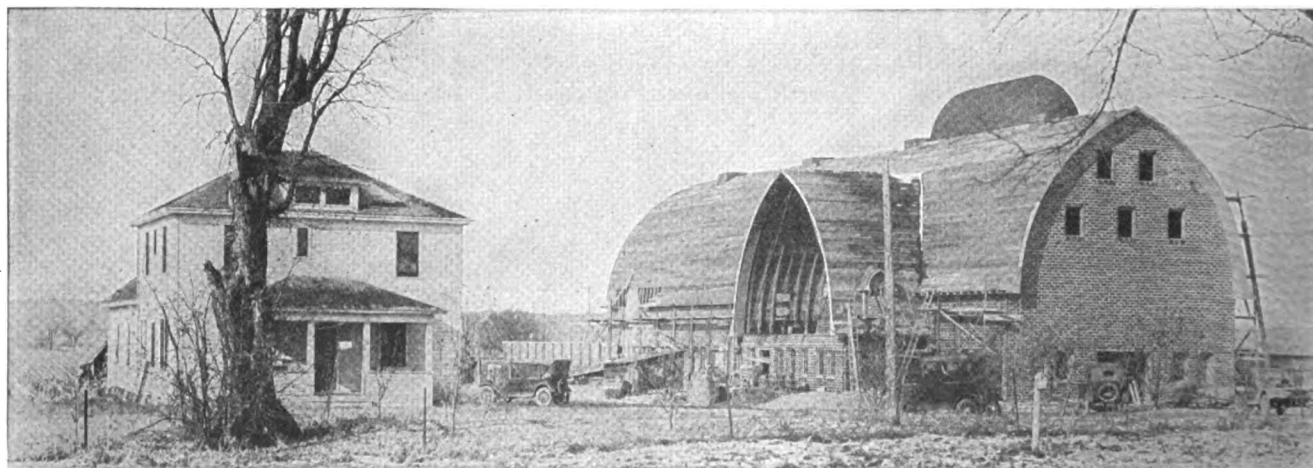
Each Federal Land Bank was required to have a capital of \$750,000 before beginning business. The banks were opened with temporary directors with the understanding that permanent directors would be elected when all the securities held by the U. S. Treasurer had been disposed of, according to an amendment to the original act. The capital stock of the Federal Land Banks are made up of \$5 shares. Each borrower thru a local farm loan association subscribes for one \$5 share of stock for each \$100 that he borrows. This arrangement is unique because thru it the borrowers of the local association will ultimately own all the capital stock of the Federal Land Bank. Moreover, the Federal Land Banks are authorized to loan up to 20 times their capital surplus. For each \$5 share they are enabled to loan another \$100, thus making the limits of their expansibility only that of the market for the bonds and the demand for sound credits by farmers.

The Federal Land Banks are authorized to issue, buy and sell farm loan bonds complying with the requirements of the Federal Farm Loan Act; to invest in first mortgages on farm lands in their respective districts; to pledge mortgages with the Farm Loan Registrar as security for farm loan bonds and use farm loan associations and agents to collect and pay dues, interest, installments and other sums, due to land banks;

to acquire and dispose of property necessary for the transaction of business, to acquire title to land in the payment of debt, but must dispose of such land within five years; to dispose of their securities subject to check with any member bank of the Federal Reserve System and receive interest on the same; to accept deposit securities or of current funds from national farm loan associations; but to pay no interest; to borrow money, give security, pay interest; to buy and sell U. S. bonds; and to carry on the work of the Land Bank as provided for in the Federal Farm Loan Act and as directed by the Farm Loan Board.

The Federal Land Banks cannot accept deposits of current funds payable upon demand except from their own stockholders, or transact any banking or other business not provided for in the Act. They are also forbidden to loan on first mortgages except thru national loan associations or agents as provided for, or to accept any mortgages other than first mortgages or those secured in the payment of debt, or to obligate for outstanding farm loan bonds in excess of 20 times their capital and surplus.

The safeguards thrown around Federal Farm Loan Banks are adequate to protect the farmers against any unfair dealings and also to protect the public against unsound securities. During past years too often farmers have been the victims of loan sharks, and the buyers of farm mortgage securities have many times not had adequate guarantee of the payment of either interest and principal.

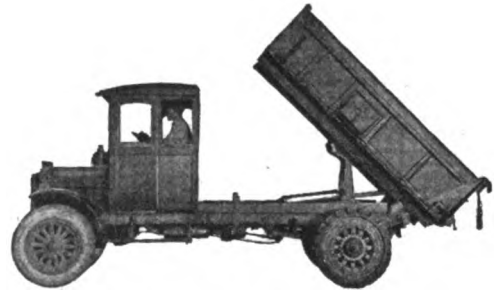
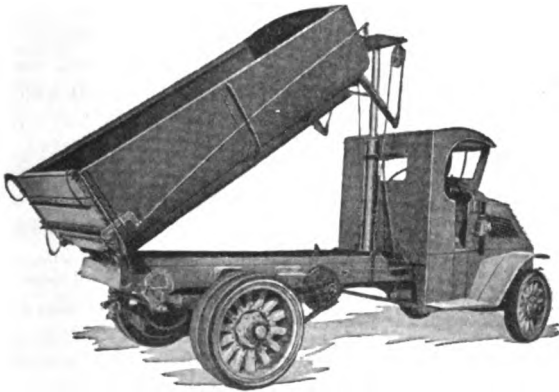


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Design Every **ST. PAUL HOIST** especially designed for each **Make and Model of Motor Truck**, including **Power Take-off drive** of improved design.

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until the hoist you are using is giving constant trouble—losing time and money for you. **GET IN TOUCH** with the nearest **ST. PAUL HOIST DISTRIBUTOR** who will prove to you why your next hoist should have the name **ST. PAUL** on it.

WRITE US NOW

while it is on your mind and we will send you our latest circular, showing sizes and prices, and also the address of our **DISTRIBUTOR** in your territory.

Some territory now open to Dealers and Distributors

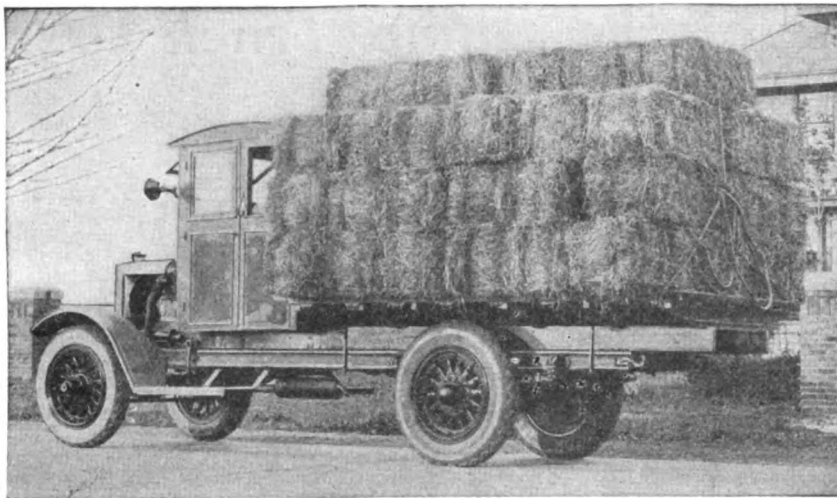
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HYDRAULIC HOIST MANUFACTURING CO.

292 Walnut Street, ST. PAUL, MINN.

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

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Efficient Marketing Depends a Great Deal on the Equipment, to Pay for Which Farmers May Borrow from the Federal Banks.

Small buyers who wished to loan from \$100 to \$500 until recent years were unable to obtain securities of these denominations upon farm lands. The Federal Farm Loan System thru the Federal Land Banks and the numerous farm loan associations makes it possible to accommodate the most needy farmers who are in position to ask for a farm mortgage and at the same time provides for those who have money to loan in farm mortgage securities in the denominations adapted to their abilities to buy.

The National Farm Loan Associations. Farmers who wish to borrow thru the Federal Land Bank must join a National Farm Loan Association or borrow thru an agent representing the Federal Land Bank and which must be a bank chartered under the laws of the respective states.

National Farm Loan Associations may be organized by any group of ten or more farmers who are farm owners, or who are about to become farm owners and who wish to borrow a sum in the aggregate of not less than \$20,000. At the present time there is a National Farm Loan Association in almost all of the important agricultural counties of the U. S., some counties having more than one association. This alone indicates the interest in the rural communities in the Federal Farm Loan System. It furthermore shows how a felt need has been met by this system.

In proceeding to organize a national Farm Loan Association the first step after a sufficient number of interested farmers have been found is to obtain the proper application forms and call a meeting for the purpose of organizing the association. At the first meeting, temporary officers should be appointed. Each applicant will fill out a blank for the loan he wishes to obtain. It is necessary to fill these blanks out

in rough form before carrying thru the organization, in order that it may be ascertained how much in the aggregate the applications for loans will amount to, and also to ascertain the number of votes that each member may have. Each member is entitled to one vote for each share of stock up to 20 shares.

The directors of the association elect a president, a vice-president, a secretary-treasurer, and a loan committee of three members. None of the directors shall be members of the loan committee. The officers, directors and loan committee are all required to be members of the association, but the secretary-treasurer may be exempt from membership. Any one who is capable of carrying on the business involved in the work may be eligible for the position. The secretary-treasurer may be paid for his work if the association feels so disposed. None of the other officers shall receive any compensation unless approved by the Federal Farm Loan Board. When the applications for loans and articles of association have been properly filled out they are forwarded to the Federal Land Bank. The Land Bank will immediately send an appraiser to investigate the solvency and character of the applicants and the value of their land. The bank then decides whether or not in its judgment the local association shall be granted a charter. After its decision the bank forwards its recommendation together with the papers to the Federal Farm Loan Board at Washington, D. C. The Board's decision is largely based upon the recommendation of the district Federal Land Bank. However, the board has power to decide against the granting of a charter regardless of the recommendation of the land bank. When the board grants a charter it is forwarded to the association thru the district Federal Land Bank.

When the appraisals have been made and the abstracts of title approved, the applications and articles of association accepted, and the charter granted, the loans are forwarded to the secretary-treasurer of the local association, who presents the loans to the borrowers according to the amount approved for each.

Securing a Loan Thru a Local Association After a Charter Has Been Granted. Any one who is an owner of farm land or about to become one may become a member of the Farm Loan Association if accepted by a two-thirds vote of the board of directors. Such applicant may, however be subjected to strict investigation the object of this ruling being to eliminate non-resident landlords, landholders, speculators, or other persons who are not bona-fide farmers. Such applicant farmer when admitted will be held for the same legal requirement as the charter member. His land will be subjected to the same appraisal, his land title searched, and he would be obliged to subscribe for one share of capital for each \$100 he borrows, just as are the charter members.

Members of Local Farm Associations. Membership is confined to actual farmers who wish to borrow on a first mortgage or improved agricultural lands. The Federal Farm Loan Board defined the terms "actual farmer," "joint mortgage" and "partners" as follows:

Actual Farmer—An actual farmer is one who conducts the farm and directs its entire operations, cultivating the same with his own hands or by means of hired labor. An owner, to borrow under the Farm Loan Act, must be responsible in every way, financially and otherwise, for the cultivation of his land.

Joint Mortgage—When a husband and wife execute a joint mortgage, one should give the other power of attorney to be his or her representative in the Farm Loan Association. Where husband and wife sign the mortgage in this way, the one in whose name the title stands should be the one designated to join the association.

Partners—The board has ruled that partners in operating a farm may borrow if one or more are farmers and are engaged in the cultivation of the land mortgaged. But partners must join severally in executing the mortgage on the land, and all should give to one the authority to represent the others in the Farm Loan Association. Only one member of the partnership can become a member of the association.

The Act moreover limited the use of money borrowed thru the Federal Land Bank. Loans are made to farmers only on farm land, the purposes for which a farmer may use the proceeds of

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Rigid Frame—will not get out of line—allows easy inspection of all tractor parts.

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Extra rigidity between engine and frame secured by anchoring engine with six long steel bolts

3

Radiator designed to insure strength, long life, easy cleaning and quick replacement in case of accident.

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Front axle design improved stronger, more flexible in movement, greater rigidity

5

Rear axle bearings have larger bearing and thrust surfaces—perfect adjustment of driving gears.

22

Tractor weight reduced: stronger, more durable construction throughout; improved materials, manufacturing facilities and workmanship

21

Internal gears on drive wheels better protected; drive wheels adapted for multiple lug arrangement to suit all kinds of soil.

20

Large, roomy platform; ample leg room when seated; plenty of space to move about

19

Simplified fuel pipe line construction and improved two compartment fuel tank of 23-gallon capacity.

18

More compact, redesigned transmission case—quick inspection and adjustment

17

Simplified, more efficient Hart-Parr Kerosene Shunt and exhaust manifold.

16

Improved vanadium steel exhaust valve springs—the last word in exhaust valve spring construction

15

Push rod and rocker arm assembly enclosed, simplified and means provided for quick, positive adjustment.

14

Motor completely enclosed—only one minute required to remove enclosure for motor adjustments

13

Improved automatic throttle action—extra durable construction of parts and connections.

12

Improved intermediate bearing added to differential shaft has many advantages.

6

All bearings not lubricated by force feed have Alcamite Grease Gun fittings. Hand oilers eliminated.

7

Steering assembly improved and strengthened—quicker and easier steering.

8

Improved water pump, fan shaft and friction pulley—adjustments simplified.

9

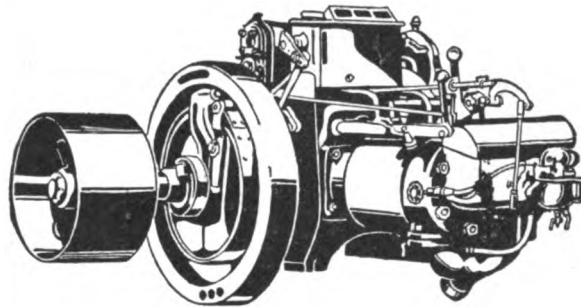
Gear shift simplified—positive, quick action. Rigid support for lever.

10

Entire clutch mechanism improved and simplified.

11

Improved centrifugal governor accurately controls engine speed—no racing after long usage.



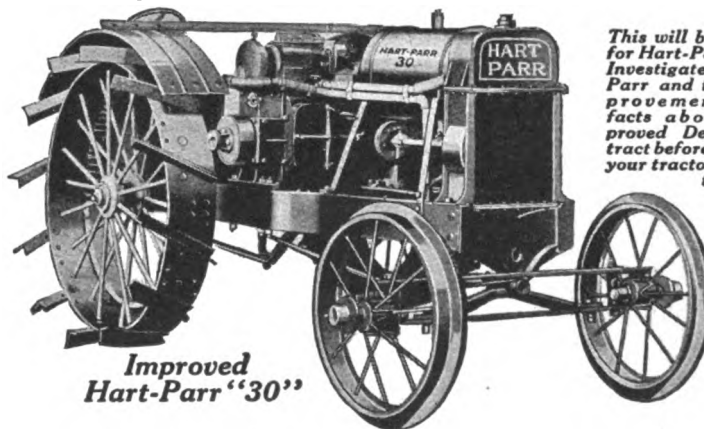
New Hart-Parr Enclosed Motor

One of the 22 Improvements

The first Hart-Parr marked the beginning of the tractor industry. During the ensuing 22 years the Hart-Parr has been steadily improved and standardized—maintaining a rightful and well-merited leadership, and making a profitable line for dealers. Our 22nd Anniversary—with its accumulated experience of 22 years—witnesses a bigger forward step than ever before; the adding of 22 important basic refinements in construction to the proven economy, efficiency and durability of the popular Hart-Parr.

One of these 22 distinctive improvements is the enclosing of the famous kerosene-

burning, surplus-powered Hart-Parr motor. All working parts are now completely protected from dust and dirt. The motor is oiled automatically, oil being pumped by a mechanical oiler to all bearings, and wear on rocker arm, push rod and bearings lessened through lubrication by oil mist. This advanced construction eliminates the usual causes of engine stoppage and consequent delay in the field. The design of the new enclosure is so simple that less than a minute is required to remove it should adjustment be necessary.



Improved Hart-Parr "30"

This will be a big year for Hart-Parr Dealers. Investigate the Hart-Parr and these 22 improvements—get the facts about our improved Dealer's Contract before deciding on your tractor line. Write today.

HART-PARR COMPANY

679 Lawler Street

Charles City, Iowa



The Federal Farm Loan System

a loan are clearly defined as follows:

1. To provide for the purchase of land for agricultural uses.
2. To provide for the purchase of equipment, fertilizers, and live stock, necessary for the proper and reasonable operation of the mortgaged farm, the term equipment to be defined by the Federal Farm Loan Board.
3. To provide buildings for the improvement of farm land. The term improvement to be defined by the Federal Farm Loan Board.
4. To liquidate indebtedness of the owner of the land mortgaged existing at the time of the organization of the first local Farm Loan Association established in or for the county in which the land mortgage is situated or indebtedness subsequently incurred for purposes mentioned in the Federal Farm Loan Act.

The Federal Farm Loan Board defined the words "equipment" and "improvement" as follows:

Equipment.—Under the term "equipment" may be included the implements needed in the conduct of the farm to facilitate its operation. It might consist of teams as well as machinery, tools and like articles.

Improvements.—Under this term it is included anything in the form of beneficial structure or any useful, permanent physical change tending to increase the productive value such as clearing, tiling, draining, fencing, and buildings.

Amount a Farmer May Borrow. No farmer may borrow more than \$10,000 nor less than \$100 thru the Federal Farm Loan Banks. The amount of the loan cannot in any case exceed 50 per cent of the appraised value of the farm and 20 per cent of the permanent insured improvements. All loans must be based upon first mortgages on farm lands. This means that the farmer must own or be able to secure upon a second mortgage or by some other means 50 per cent of the value of the land and 80 per cent of the value of improvements. Ten thousand dollars may be an adequate sum for a farmer to borrow upon a first mortgage in many of the Eastern states or in some of the pioneer agricultural regions, but in the better agricultural states of the

Middle West, \$10,000 is a very small item. When we learn that the average farm in some counties of Illinois is valued at \$71,000, this system cannot justly serve this class of farmers. It was to care for this class of farmers that the Joint Stock Land Banks were provided for, which will be discussed in the succeeding article.

Interest Rates. Before the Federal Farm Loan System, rumors were heard of exorbitant interest rates, ranging from 7 per cent to 12 per cent, but under the Federal Farm Loan System interest rates cannot exceed 6 per cent, and in no case can the commission exceed 1 per cent. At this date rates to farmers are $5\frac{1}{2}$ per cent.

Number of Years a Loan May Run. The farmer who borrows thru a Federal Land Bank is free to specify any number of years ranging from 5 to 40 to pay off the loan. Moreover, he may pay off the loan in a shorter period than that which is specified, that is, a farmer who borrows \$1,000 states in his application that he will pay the loan off in 20 years, may pay off the entire loan at the end of 5, 10 or 15 years if he finds it to his advantage. The law provides that after five years a farmer may pay any amount or all the remaining principal on any interest-paying date in installments of multiples of \$25. From the standpoint of the farmer this is a most valuable provision; it enables him to borrow for a long period, with the privilege of paying annually or semi-annually a fixed installment upon the mortgage, and if he finds it convenient to pay more he may do it. In this way the progressive farmer

can pay off his mortgage as rapidly as conditions will permit.

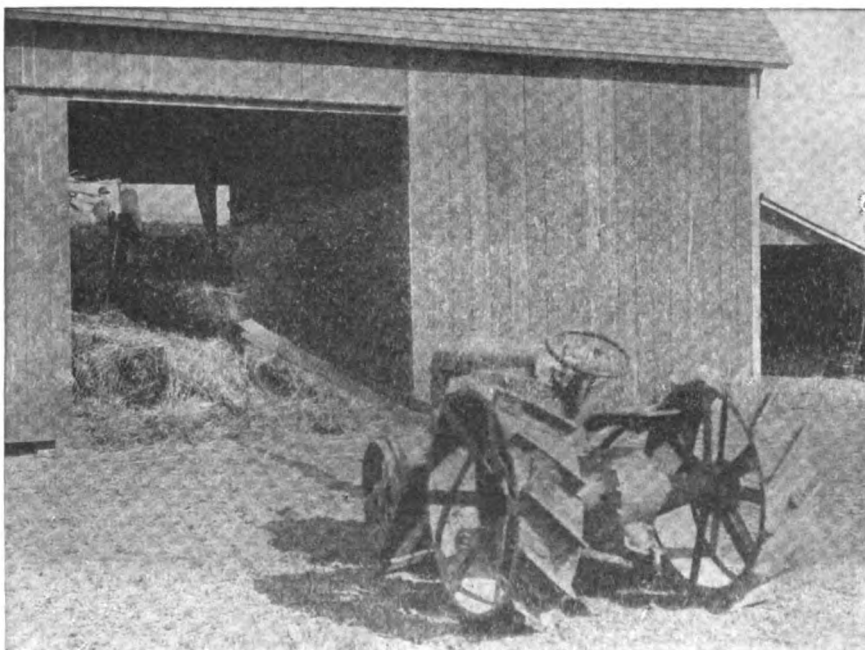
Costs of Securing a Loan. The cost to the borrower in securing a loan thru the Federal Land Bank may be summed up as follows:

1. The application fee to cover cost of appraisal and expenses of the local association.
2. The cost of title research.
3. The preparation of an abstract.
4. The recording of paper.
5. Not more than 1 per cent commission.

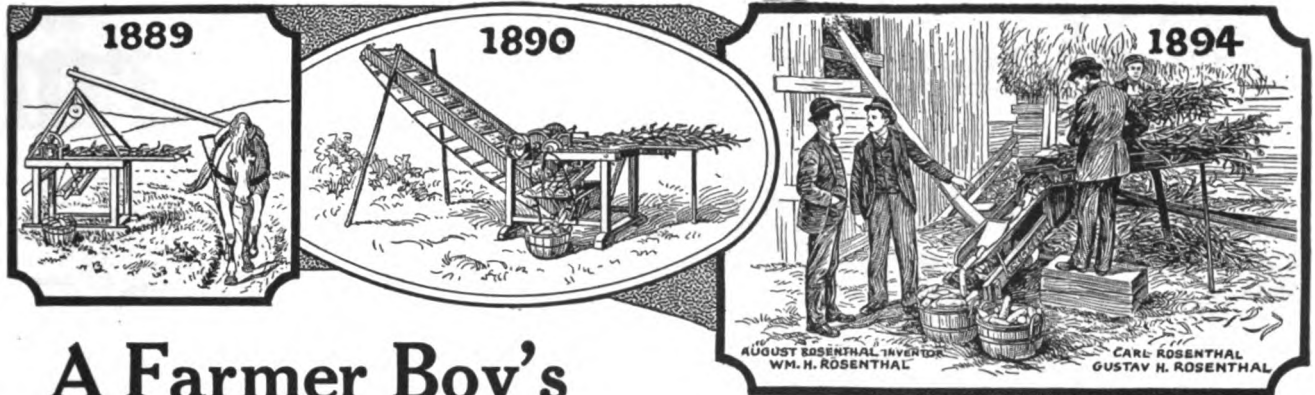
The application fee of \$10 is the same for all members; the other costs such as are involved in title research, the preparation of an abstract, and the recording of papers, will vary for each individual farmer. If the farmer's title is recorded, and is clear, and void of all legal technicalities, the research of title can be made with little expense. On the other hand, if the title has disputed claimants, and a controversial history, the cost may be very large. However, in either case it is a good investment for a farmer to have his title cleared up and secured. Under the Federal Farm Loan System there are no renewal costs, no bonuses, and no recording or mortgage taxes.

Appraising the Farm. Appraising farm lands is a task requiring accurate knowledge of agriculture and economic conditions, as well as a careful judgment upon the management. The Federal Farm Loan Board stated that "the appraisal of a farm should represent the best judgment of the members of the loan committee as to the value of the land in question, the principal factor being the productivity of the land when used for agricultural purposes, but taking also into consideration the salcability of the land and prevailing land prices in that community.

Advantages of the Federal Farm Land System. The Federal Farm Loan Banks are national in character. They provide a uniform system of operation in the matters of land appraisal, amount of loans, methods of dealing with farmers, length of term loans may run, uniformity of interest rates, and offer to the farmer at all times a service which is at his disposal when he can offer security that meets the requirements. The system deals impartially with all farmers no matter where located in the continental United States, or how far they may be from the Land Bank itself. It provides an organized banking system for collecting together the numerous small mortgages consolidating them into bond issues, and offering them to the buying public, which reduces the costs of selling the securities far below that which is possible for small local private institutions to do. Moreover, it brings to the buying public a standardized farm mortgage bond security, which is always safe, and removes the speculation in farm mortgages.



The Tractor Is Another Piece of Farm Equipment for Which Loans May Be Secured.



DRAWINGS
from ACTUAL
PHOTOGRAPHS

A Farmer Boy's Dream Come True

IT was 34 years ago—in 1889. For seven years, August Rosenthal had labored on a machine that would husk corn automatically. Plow-horse "Prince" was hitched to the pole, and in a shaky voice the young farmer boy inventor said "Giddap". "Prince" moved forward. It was the biggest moment in the life of the Rosenthal family of Reedsburg, Wisconsin. Biggest because the machine was successful—corn flowed into the hopper and came out cleanly husked!

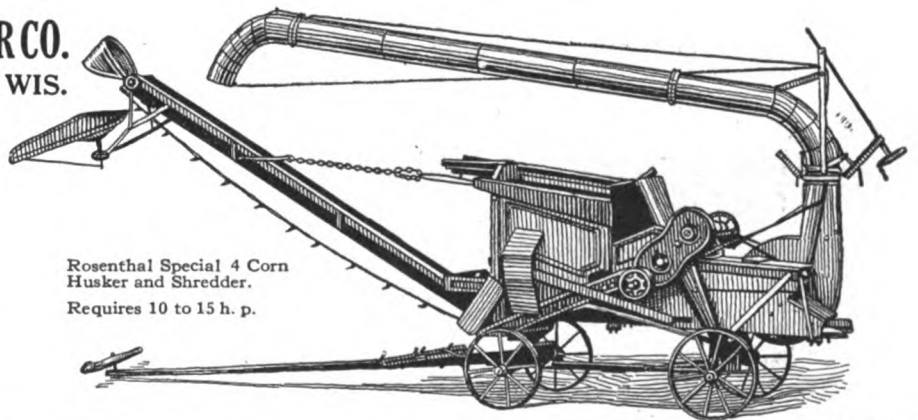
The reason why this *pioneer* in the corn husker and shredder business is today the *leader*, is best told by the picture-story here. Farm-bred, every member of the Rosenthal organization has guarded against letting business gain interfere with giving the farmers the utmost in value. That is why Rosenthal Corn Huskers and Shredders are lighter running and do cleaner and faster work. Operate successfully—all day long—even if stalks are dry or frozen. Fully guaranteed.

ROSENTHAL CORN HUSKER CO.
Box M MILWAUKEE, WIS.

Dealers!

For 34 years this organization has specialized in this one line. We have an attractive offer for you. Sales of Corn Huskers and Shredders are becoming bigger each year. Write us.

Rosenthal Special 4 Corn
Husker and Shredder.
Requires 10 to 15 h. p.



Sold on Trial— You Take No Risk

Right now—when you are deciding your corn acreage—is the time to look ahead to the way you will use your crop.

Authorities state that 63% of corn's nutriment is in the ears and the remaining 37% is in the stalk. A Rosenthal Corn Husker and Shredder makes this 37% available.

Write at once for details of our proposition. Completely illustrated 48-page catalog in colors describing complete line of four sizes of Corn Huskers and Shredders sent on request. Also three sizes of Ensilage Cutters. Useful souvenir FREE.

Make Money, Save Money —Next Fall, Do Your Own Shredding

Most economical and profitable way of handling your corn crop. Supplies roughage so essential to a balanced dairy ration.

Make money doing custom work. Shredding comes at a time when your tractor might otherwise be idle. With a Rosenthal you can take a good substantial profit out of ordinarily dull months. Scores of Rosenthal owners are doing it. Many pay for their machine in a single season out of the profits.

1923

ROSENTHAL

CORN HUSKERS and SHREDDERS



How to Market Hogs

By EDWARD N. WENTWORTH

IN general, prices of livestock tend to rise as the runs to market decrease, and tend to lower as the runs to market increase. This fact is shown very forcibly in the table. From this it will be seen that hog runs are very large in the period from November 1st to March 1st, and that they are relatively low during the rest of the year. Similarly it will be seen that the prices drop in these months as rapidly as the run of hogs increases, and vice versa. Over a period of 21 years, 1901-1921, inclusive, the average monthly runs and prices at Chicago were as follows:

	Jan.	Feb.
Receipts (head)	888,000	759,000
Price per cwt.	\$8.17	\$8.43
	July	Aug.
Receipts (head)	522,000	484,000
Price per cwt.	\$9.28	\$9.27

The position of September as the month of light runs and high prices is well demonstrated by this table.

The rate at which hogs vary in weight over the year as compared to the runs of hogs and their prices is shown in the table. For a period of twenty-one years the seasonal variations in weights at the Chicago market have been as follows:

	Pounds		Pounds
Jan.	215	July	235
Feb.	217	Aug.	241
March	222	Sept.	254
April	226	Oct.	227
May	229	Nov.	218
June	230	Dec.	216

These weights may be compared to the prices quoted for the corresponding months in the preceding paragraphs. However, the prices there given are more greatly influenced by the runs than by the weights.

A better measure of prices, with reference to weight, may be found by comparing hogs of different weights in the same year. For the last four years, at Chicago, these differences have been as follows:

Year	Heavy	Mixed	Light	Pigs
1921	\$ 8.35	\$ 8.70	\$ 8.95	\$ 8.70
1920	13.85	14.20	14.50	13.10
1919	17.70	17.80	18.00	16.00
1918	17.50	17.40	17.60	15.75

This shows that in recent years the light hog is decidedly at a premium, selling at an average of about 40 cents per cwt. more than heavy hogs, and about 25 cents per cwt. more than mixed hogs. The demand for light hogs has been most marked during recent years, so that if the war period is included one finds that heavy hogs sold for only 3 cents less per cwt. than light hogs over a 15-year period. Light hogs are in relatively greater demand at certain seasons of the year than at others. During the

last six years the average relationship was:

		Jan.	Feb.
Light		\$12.70	\$13.15
Heavy		12.74	13.09
Margin		\$.04	\$.06
		July	Aug.
Light		\$15.01	\$15.31
Heavy		14.72	14.90
Margin		\$.29	\$.41
Mar.	Apr.	May	June
\$14.39	\$14.58	\$14.50	\$14.84
14.13	14.30	14.53	14.10
\$.26	\$.28	\$.03	\$.24
Sept.	Oct.	Nov.	Dec.
\$15.22	\$13.63	\$13.09	\$12.40
14.76	13.33	13.12	12.36
\$.46	\$.30	\$.03	\$.04

This table shows that in January, February, May, November and December the prices of the two grades were approximately equal, while in August and September the premium for light hogs was relatively large. The averages presented here do not measure the recent discrimination between light and heavy hogs. The margin has run from 80 cents to \$1.50 per cwt. at times during the last year or two.

Prices of hogs would be stable if the amount of products on the market equaled exactly the demand for meats, and if the number of hogs coming to market always equaled exactly the replacement demands. This is impossible, but uniform runs of hogs from month to month thruout the year would more nearly approach this condition. Fluctuations in price due to differences of supply would be eliminated. More than half of the total fluctuations in price would probably be avoided since fluctuations in demand are usually never so sudden nor so disastrous as fluctuations in supply. If runs could be evened monthly as well as daily a considerable saving in cost of service could be effected. For example, the Chicago yards must be capable of handling 60,000 hogs or 12,000 daily; the commission men operating on the yards must have forces large enough to handle the peak runs; and the packers must maintain plants capable of absorbing this number of hogs. If hogs cannot be unloaded



The Grand Champion Carload of Hogs at the 1922 International Livestock Exposition.

The Auto-Oiled Aermotor

A REAL SELF-OILING WINDMILL

With Duplicate Gears Running in Oil

A year's supply of oil is sent with every Aermotor. Empty this can of oil into the gear case when the mill is erected, and you need not think about oiling again for a full year. The oiling arrangement is complete in every detail and perfectly automatic.

A constant stream of oil flows on every bearing. The shafts run in oil. Every cog is covered with oil. There is oil everywhere, yet none escapes, because all surplus oil flows back into the gear case to be used over and over again.

The illustration below enables you to look thru the gear case and helmet and see the interior parts of the motor. The horizontal lines in the gear case indicate the oil and they show how the lower part of the large gears is always submerged in the oil. As the gears revolve they carry a flood of oil up onto the pinions. Some of this oil flows off into the bearings on each side of the pinions, some of it runs down into the bearing for the large gears, a part of it flows out into the arm which supports the wind wheel and oils the bearing and thrust washers within the hub. A small part of it is picked up by the ring oiler and deposited on the shaft which carries the guide roller and the upper ends of the pitmen. Every working part is fully and constantly oiled. Friction is practically eliminated and the Aermotor runs in the lightest breeze. This is most important in the summer months when the winds are frequently very light.

The ability of the Aermotor to run in light winds is due to some very important features which are most perfectly worked out in this windmill. First and most important is the correct design of the wheel. The proper size, shape, curvature and angle of the sails were determined by most exhaustive experiments. Added to the correct design of the wheel, is its ability to face up to the lightest winds. The turntable is small and well oiled so that the mill is very sensitive to the direction of the wind. When perfect lubrication is added to the best that is possible in design and construction, the result is a windmill which gives the best and the most service.

More water is pumped by Aermotors, for stock and domestic purposes, than by any other kind of pumping machinery. They do their work silently, surely and satisfactorily. You cannot travel far

today without seeing an Aermotor standing out as the most prominent object in the landscape. Go to any any part of the inhabited world and you will find the Aermotor there ahead of you. They are used everywhere because they have been found to be the most economical and most reliable device for pumping water.

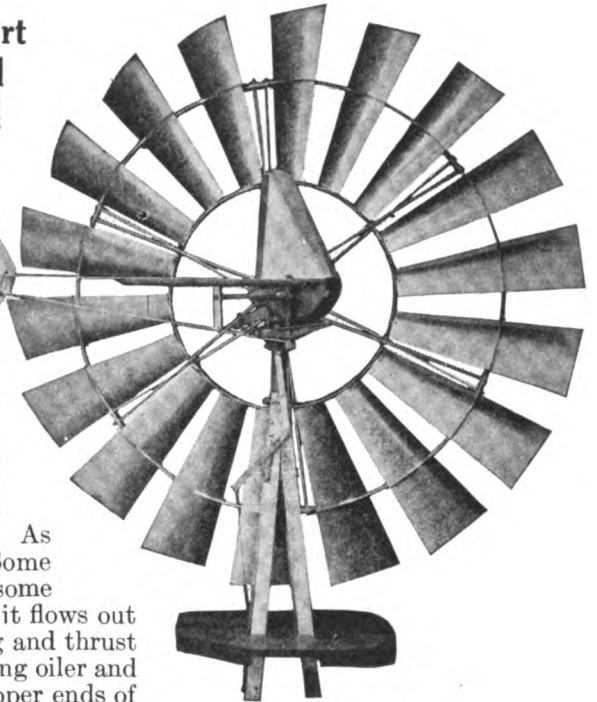
AERMOTOR CO.

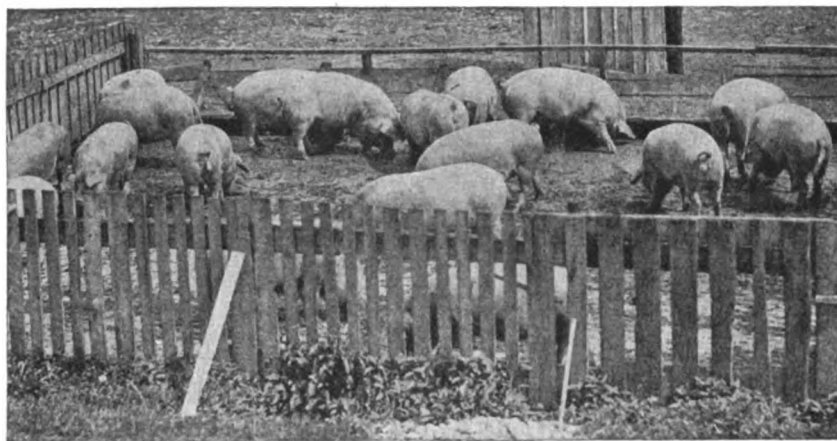
CHICAGO



The Helmet, or Hood, covers all of the working parts of the mill. No rain can get in to flood out the oil. No dust can blow in to grind out the bearings. No oil can splash out.

Every Working Part
is Constantly and
Completely Oiled





Putting the Finishing Touches on Some Good Chester Whites.

promptly on arrival, immediately penned, watered and fed, and sold with a reasonable degree of promptness, the shipper is dissatisfied. Yet, in order to give him this service, a great overhead in men, plants and equipment must be maintained. If, on the other hand, supplies of hogs could be evenly distributed, the overhead in some directions could be shrunk from 30 to 60 per cent. Whether the farmer could market more evenly and at a price sufficiently less to offset this overhead is questionable.

Before hogs are loaded the car should be cleaned thoroly of all manure and refuse and sprinkled with lime or some other absorbent material possessing disinfectant properties. In winter the car should be well bedded with straw, and if the weather is extremely cold, the side of the car which will be to the north should be covered with building paper. In the summer the car should be bedded with sand rather than straw, and thoroly wet down. Much of the gain which may have been made during the feeding period is lost by the hogs en route to market. In general, hogs are not subject to as great a shrink as cattle, but they normally lose from $2\frac{1}{2}$ to 4 per cent of their home weight. Carloads of light hogs shrink more during shipment than heavy hogs, often 6 to 8 per cent of their live weight, but they always take a greater fill after unloading, so the ultimate shrink may be no more than on heavy

hogs. Moreover in shipping light hogs, the losses due to injury, bruises and over-heating are much less. It never pays to crowd hogs, as the losses nearly always overbalance the saving in freight. This is especially important in heavily corn-fed hogs, as they do not develop as large a set of lungs as those that have had to rustle for their feed, hence they are more likely to overheat and to suffocate. In general, corn-fed hogs have only 70 to 80 per cent of the lung capacity of pasture hogs. Hogs are unable to perspire and their excess moisture and heat is passed off thru the lungs. In hot weather the practice is sometimes adopted of suspending 50-pound cakes of ice in gunny sacks at intervals of about 4 feet along the center line of the car. The motion of the car will spray the hogs with cool water. Hogs should not be overfed just before shipping. This is a prolific source of mortality in the summer months. In the winter, spring and fall, some feeders find it advantageous to place about 10 bushels of corn in the car, allowing the hogs to eat normally as they travel. This cuts down the shrinkage and brings the animal thru in better shape than if they are overfed before loading. Many hog raisers allow their hogs only water to last 12 hours before shipping in order to get a better fill at the market. This practice may become dangerous, as such animals usually overfill and cannot retain the

feed on their stomachs. One of the first things that will cause a buyer to hold up his bid on a given load is to discover small quantities of ground-up corn vomited by overstuffed animals.

Each day dozens of cripples and dead hogs arrive at the market, which pay little more than freight. Cripples are sold to speculators for an average of a dollar or more a hundred under the going price for normal hogs of similar grade. There are three general causes of cripples—improper feeding and exercise, overloading and bad handling. Beating, kicking and whipping hogs is not only cruel and unnecessary, but the bruises show on the carcass, and many otherwise perfect cuts must suffer because of the amount of trimming necessary or the general uninviting appearance. Blood scars, which are invisible on the freshly selected hams, often come out distinctly during the process of smoking, and thus make a second-grade ham out of what should be a perfect one. Hogs showing whip cords and lumps due to beating or kicking are discriminated against by buyers. Many of the livestock exchanges impose fines on members whose men are permitted to strike, beat or prod a hog at the market. Signs are conspicuously posted in the scale houses warning against this practice; advice that can profitably be followed elsewhere. The next most common cause of cripples occurs at the time of loading. Overcrowding of cars and hurried loading and unloading are the prime offenses in this connection. In winter special care must be taken not to drive the hogs too rapidly over slippery ground. Hogs also suffer seriously from fright when the train first gets in motion, hence it is well to watch the car until the switching is completed, as by this time the hogs will have become accustomed to their new experience and will ride more easily. Some loss is caused by lack of exercise and improper feeding during the growth period. If hogs are kept in small lots without exercise, they cannot develop legs strong enough to carry them to market. The following suggestions issued by the National Livestock Exchange prove helpful:

1. Always route your shipments thru to destination and designate each road handling it.

2. Always insert the number and kind of each species of stock loaded.

3. Always see that car order information is inserted when the car furnished differs from the car ordered.

4. Always insert in the proper space the rate which you understand is to be applied. If the rate and route conflict, it is the agent's duty to inform you.

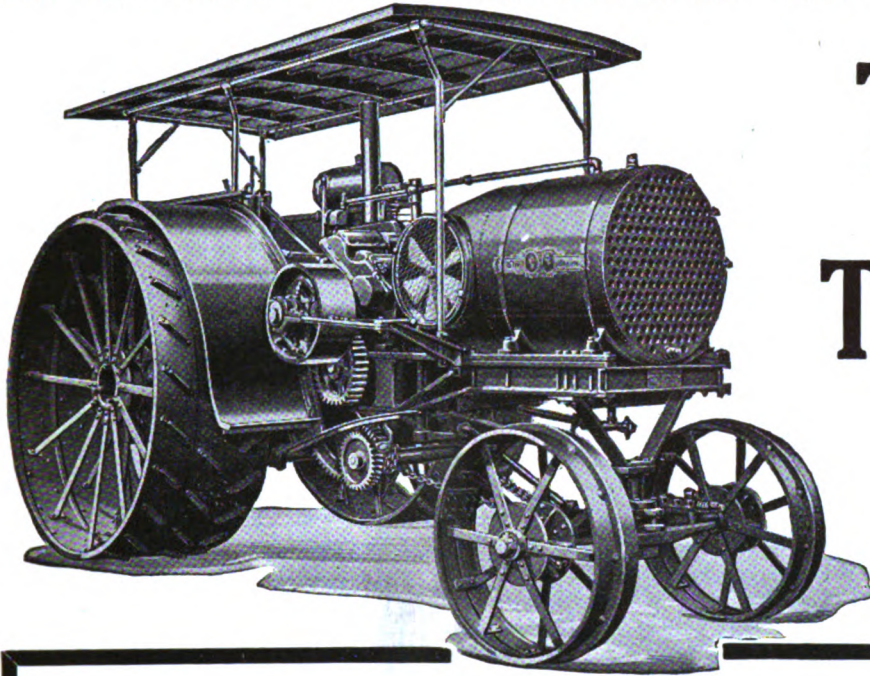
5. Always give specific instructions as to the place of feeding en route, indi-



Hogs and Cattle Both Profit by Good Pasture.

Aultman-Taylor

Tractors and Threshers



30-
60

PUT the Aultman-Taylor 30-60 to work on any job—farm or road—and watch results. *It will build more miles of road in shorter time, at lower cost than any other power in existence.*

And it will put through every farm power job with equal efficiency and economy. Your dealer will be glad to talk over the question of whether this powerful tractor or its small brother, the 22-45, will best fit into your farm work plan. At the same time look over the famous line of

New Century Threshers

This reliable outfit, with its famous old "starved rooster" trademark is the same dependable separator that Aultman-Taylor has made for years—with the same outstanding features that have placed it supreme in the field.

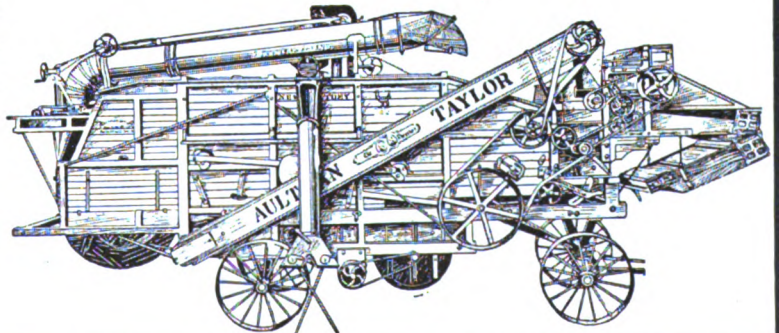
The Universal Rotary Straw Rack and In-

clined Traveling Web *absolutely* prevent clogging. They double the capacity and insure *perfect separation*. New Century threshers are made in four sizes, all absolutely standard in design and construction. *The 22x36 size is ideal for use with the small tractor for individual and community threshing.*

Your dealer will show you the Aultman-Taylor line of tractors and threshers. See him or write direct.



The Aultman & Taylor
Machinery Company
Mansfield, Ohio



cating the kind and quantity of feed to be furnished.

6. Always release your shipment to the 36-hour limit unless, in your opinion, the 28-hour limit should be observed.

7. Never accept a contract where the carrier's agent seeks to limit the liability of the carrier.

8. Never declare the value of "ordinary live stock." The agent cannot lawfully require this of you.

9. Never pay a rate on "ordinary live stock" dependent upon the declared value. If it has been paid file a claim to recover the overcharge.

10. Never let the railroad agent route your shipment against your own preference. The law gives this right to you exclusively.

11. Never pay loading or unloading charges at public markets nor at intermediate feeding stations, except when you order the stock fed there. The law imposes upon the carrier the duty of performing this service.

12. Always check your railroad billing weight against sale weight to avoid overpayment.

13. Always declare the full value of other than "ordinary live stock," otherwise you can recover only the declared value.

Cattle Lice Expensive

WHY spend money on valuable cattle feed to nourish lice?

During this season of the year, according to Prof. J. W. Bartlett, animal husbandman of the New Jersey Agricultural College, cattle are often affected with lice, young stock being most susceptible, tho milk cows are not exempt. The so-called "Blue Louse" is the one commonly found. Being a blood-sucking and not a biting insect, it not only hinders growth and prevents thriftiness, but causes a mange and loss of hair.

At such a time as this it is very expensive to waste any feed, and when one considers the amount of food material that these insects must consume thru the blood, it is easily seen how greatly they increase the cost of milk production.

Coal tar dips and sprays may be used with success, but where there are not too many animals affected, kerosene and lard mixed according to the following formula will serve the purpose.

Mix $\frac{1}{2}$ pint of kerosene warmed in hot water with 1 pound of melted lard and apply along the animal's back and neck. If the hair is long the back of the animal should be clipped.

Another means of eradicating lice is by the Kentucky Black Leaf 40 method. The

following formula is recommended:

1 pint Black Leaf 40 to 86 gals. of water
or $\frac{1}{2}$ pint Black Leaf 40 to 33 gals. of water
or $\frac{1}{4}$ pint Black Leaf 40 to 21 gals. of water

Apply with brush along back and neck.



Endless Chain Pig Club

AN "endless chain" pig club, designed to get farm boys started with purebred livestock, is attracting considerable attention among farmers in Kentucky, County Agent W. R. Reynolds, of Jackson county, says. Purebred pigs are distributed free to interested farm boys who return two gilts out of the first litter that their animal farrows to pay for the pig which they received. Pigs that are returned as payments for those already distributed, in turn are given out to other farm boys who become members of the club. Eighteen youngsters recently were given a start with purebred pigs under this plan.



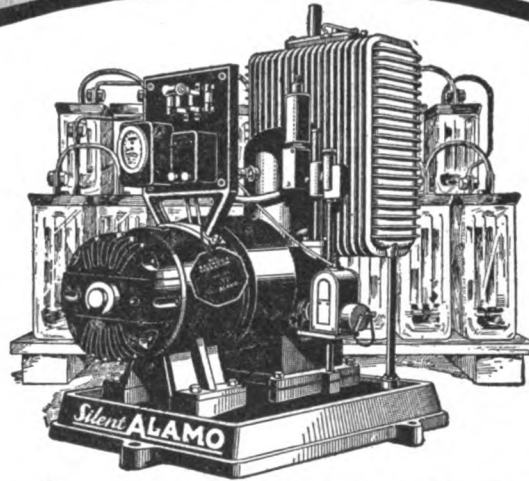
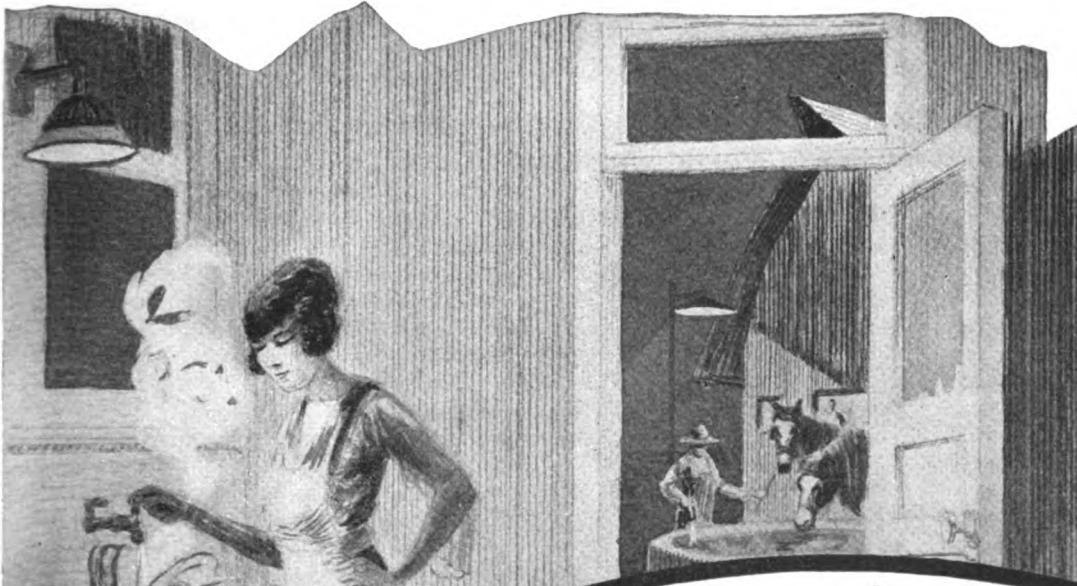
TO keep ink from spreading when marking clothes, first trace with a heavy pencil and then go over the pencil marks with the ink.



IF the painter gets too vehement with his brush when painting around the window, don't waste time scolding. Steel wool will take the spatters off.



When the Pure-Bred Hereford Breeders Gather. This picture was taken during the annual picnic held on the farm of J. W. Vanatta, pioneer Hereford breeder, Lafayette, Ind.



Silent **ALAMO**

REGISTERED IN U. S. PATENT OFFICE

FARM ELECTRIC POWER AND LIGHT PLANT

The quiet busy member of the household of successful, modern farmers. The member who does the heavy work of operating the Milker, Separator, Churn, Washing Machine, Grindstone, Vacuum Cleaner, the Iron and other electrical appliances. The member who furnishes light, and at the lowest possible cost.

Those of you who now use the SILENT ALAMO need not be reminded of its wonderful dependability.

To those who are going to buy their farm light plant, let us suggest that the record ALAMO has already established makes it worthy of your consideration.

There are some fine points to be considered in your selection. We have prepared a booklet covering these points, which we would be glad to mail upon request. It will aid you in choosing the right plant at your dealers.

TO THE DEALER:

No product has a greater rural market than the electric farm light and power plant.

No business in the farm field has greater possibilities—no product has a greater potential market—no improvement more needed on the farm than a farm electric power and light plant. These are the fundamentals of a successful business.

You can, with but a small investment, produce an annual return from four to six thousand dollars. You can make the same showing as the average merchant who has an investment in goods on his shelves of seven to thirty thousand dollars.

Now is the time to secure exclusive territory for the SILENT ALAMO. Write at once.

ALAMO FARM LIGHT CO.

**General Offices: 705 Tower Bldg., CHICAGO, ILL.
FACTORY AT HILLSDALE, MICH.**

Concrete Helps Feed the Nation

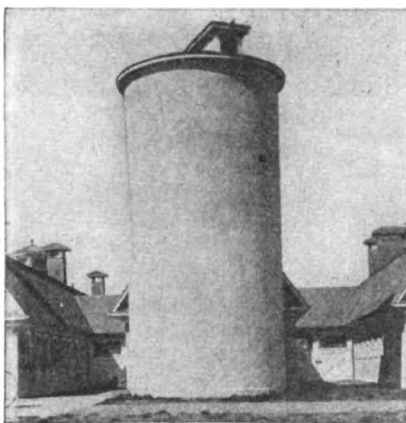
Building Material Plays Prominent Part in Production, Storage and Transportation of Farm Products

BY R. U. BLASINGAME

HOW is it that the well informed people of the United States can have an assortment of green vegetables and fresh fruits such as celery, beets, lettuce, spinach, turnips, tomatoes, cauliflower, potatoes, apples, oranges, grapes, cabbage, etc., on the table for Christmas dinner? How also did snails and frogs' legs come into use in France, and fried rhinoceros hides in Africa, and seaweeds and candied grasshoppers in Japan, and mouldy cheese with skippers in it in England, and powdered deer horns in China, and pickled pigs' feet in Germany? It is reasonable to suppose that these customs of diet were acquired in some natural way just as we know that teas, chocolate and coffee came into fashion today in American and European countries. Such fashions of diet in various countries come into general use thru the encouragement given them by those who set the fashions of the day.

It is on account of the pleasant flavor of fresh fruits and vegetables, and modern science has shown the important part that these articles of food play in furnishing acids and mineral salt, especially those containing lime, phosphorus, and iron in maintaining the chemical equilibrium of the body. Some of the noted scientists have recom-

mend that the diet in middle life should decrease in meat and all fresh foods as age advances, and that vegetables and fruits, especially those of bulky character and low in food value be increased. Fruits and vegetables supply organisms, vitamins, and contain ele-



A Good Concrete Silo.

ments which tend to correct the ill effects of a diet high in protein.

Storage and Transportation

Thru the use of concrete in constructing highways, bridges, and railroads, long and short distance shipping is pos-

sible. Concrete is also used extensively for floors in cold storage plants, foundations for refrigeration machinery and to some extent in walls for such buildings. Thus with the development of cold storage plants butter, eggs, fruits, vegetables, meats, etc., are available the year round. Flooding of the market at certain periods of the year is prevented and prices are comparatively uniform.

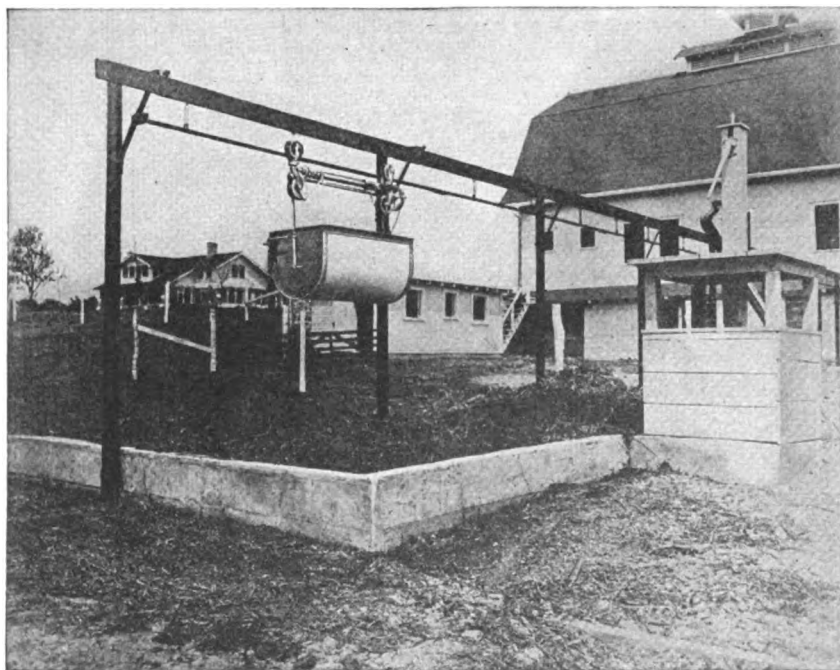
Storage and transportation are not only beneficial to the consumer but are valuable in stabilizing production, because the producer of perishable products knows that an over-production in one part of the country will be needed in another section later and that storage will carry his products safely from seasons of great supply and low prices to times of scarcity and higher prices. Also the 300,000 miles of surface highways in the U. S. and the half million motor trucks will relieve the railroads and reduce the time necessary to place the product in the market.

Concrete has been used extensively in the construction of this magnificent mileage of highways and the public is proud of its investment of five billion dollars in the project. The commerce of today goes ahead in fine shape even tho one of the ablest transportation generals of the day, J. J. Hill, made the statement in 1907 that 1100 million dollars would have to be spent every year for five years to construct terminals big enough to handle the nation's commerce. Instead of the terminals growing, *concrete* has been put in the shape of roads and trucks built which meet the needs. If it were not for good roads, fruits would decay, milk and cream would sour before delivery to the consumer, vegetables would rot and eggs would spoil for lack of rapid transportation.

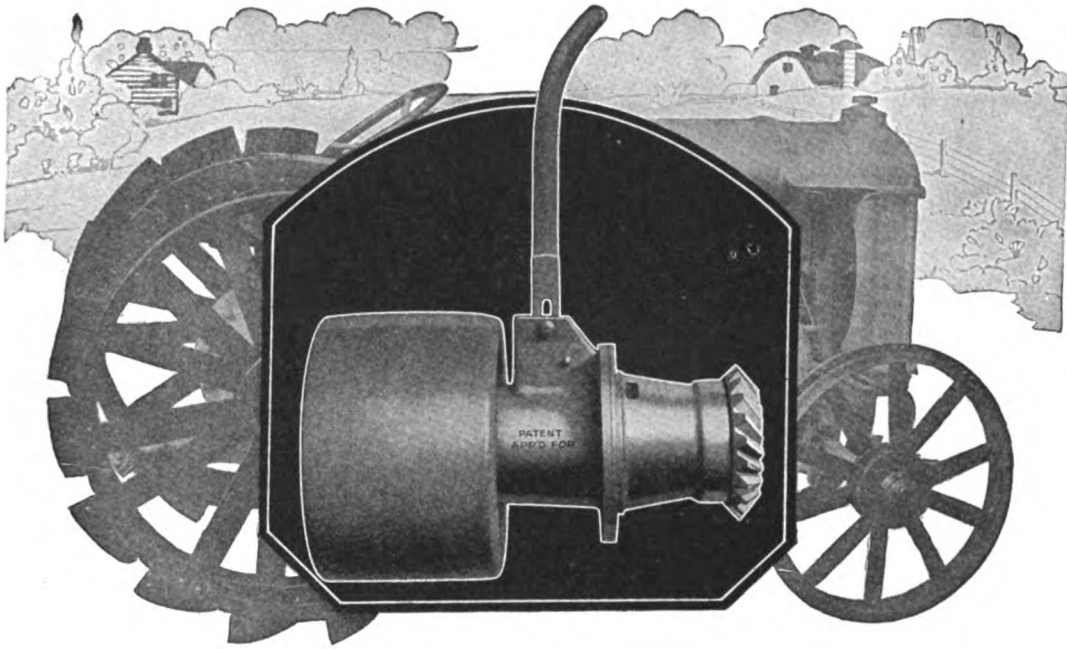
Concrete has helped work this wonder.

Concrete on the Farm

While transportation and cold storage are important to our food supply, yet one must not overlook the red barn which dots the American landscape. The barn is the nation's storehouse. In it, hay, livestock, and grain are housed. From these barns come the steady milk, meat, and grain supply the year round. To a large degree these barns rest upon concrete foundations which give unquestioned stability to the structure and make them an inheritance for the future



The Concrete Manure Pit Provides a Place Where Most of the Plant Food Is Retained.



Fordson's Great Belt-Power Instantly Available!

YOUR Fordson can be switched from field work to belt power *instantly* when equipped with the inexpensive Smith Unit Pulley-Clutch. Put it on *once* and *leave it there!* Won't throw oil.

Back your Fordson into belt on its own power, with Smith Unit Pulley-Clutch idle. Pull the lever—and your machinery hums!

Tested and perfected in months of service. Safe—simple—strong. Removes the last argument of the high priced tractor. Ball Bearings interchangeable with Fordson bearings.

*Write for particulars and prices,
mentioning nearest Fordson dealer.*

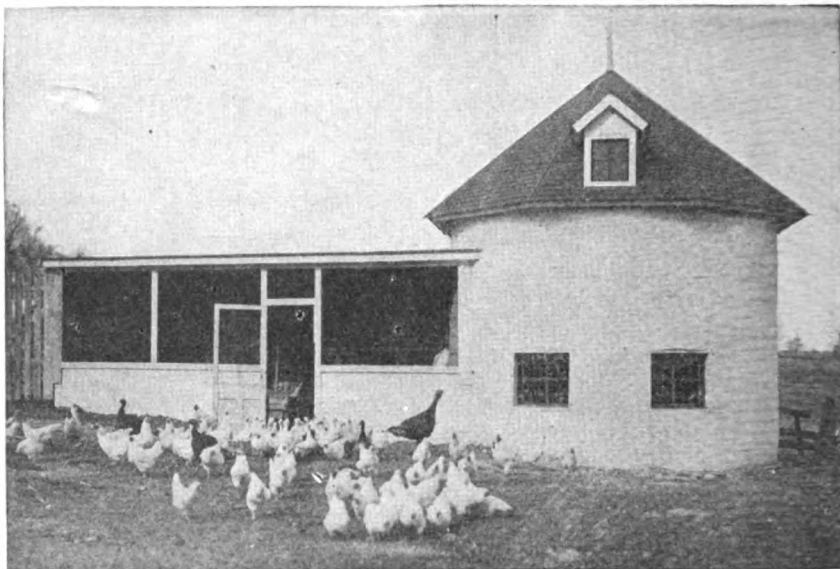
DALLMANN MACHINE & MFG. COMPANY
920-936 Winnebago St. Milwaukee, Wisconsin

**SMITH
UNIT** **PULLEY-CLUTCH
for Fordsons**

generation. Also in large measure the floors are of concrete. Smooth hard floors are a guarantee of sanitary conditions, guard against the loss of feed and are a protection from vermin and rodents.

The Silo

This device recently introduced into this country from France is built in many instances of concrete, or when built of other material rests upon a concrete foundation. The silo is rapidly coming into use because it uses the entire corn plant, blades, stalk, husk, and ear. In the form of silage corn makes its greatest possible food return for ruminant animals. Since corn can be put into the silo several weeks before it is mature it can be grown farther north than can the ripened grain. Therefore, the silo has increased the surety of the corn crop in far northern



Concrete Supplies the Material for Permanent Farm Buildings.



Concrete Is the Material Used for the Main Irrigation Ditches in the Western Arid Lands.

climates. The country depends in a large degree upon the silo to furnish a succulent food to maintain a steady milk supply.

Root Cellars

Concrete is being used in a large degree for constructing root cellars on the farm. Where the farmer is unable to avail himself of cold storage plants the cellar comes in handy for keeping celery, beets, potatoes, apples, and other produce. The use of the root cellar aids in maintaining prices, minimizes losses of food products, provides the customer with food products which he needs the year round and stabilizes production.

The Ice House

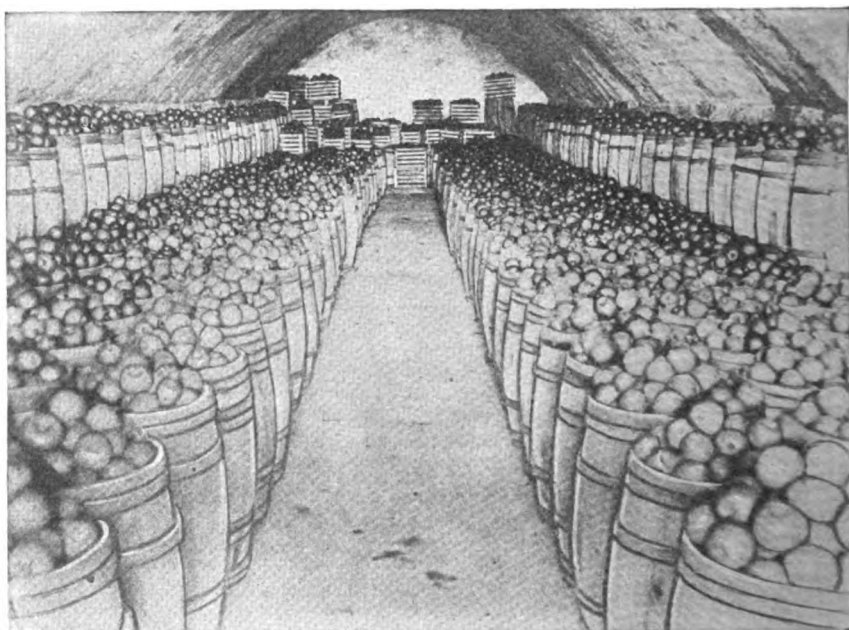
In northern climates the dairy farmer has the chance at small cost of harvesting sufficient natural ice for his year's needs. It is highly important, in order to put out high grade milk and cream to keep it cool until delivered to market. The ice houses built of concrete

are standing alternate wet and dry conditions imposed upon them and are aiding materially in supplying to the nation high grade milk and milk products which are so necessary in the diet of children.

Irrigation

Concrete is used extensively in dam and flume construction in the irrigated districts of the west. Every acre brought under cultivation thru irrigation is boosting the food supply which has aided in bringing this country to its present high development.

Indeed concrete has entered very largely into the matter of aiding to feed the nation.

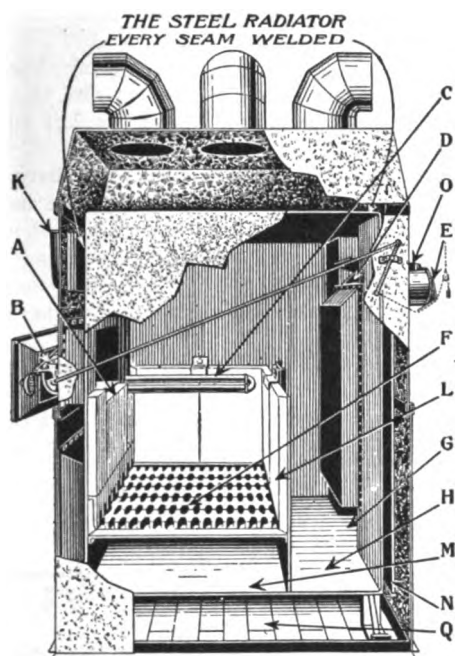


Apples in a Concrete Cold Storage House Where They Keep Well and Provide a Continuous Supply of Fruit Thruout the Winter.

Hess Welded Steel Furnaces

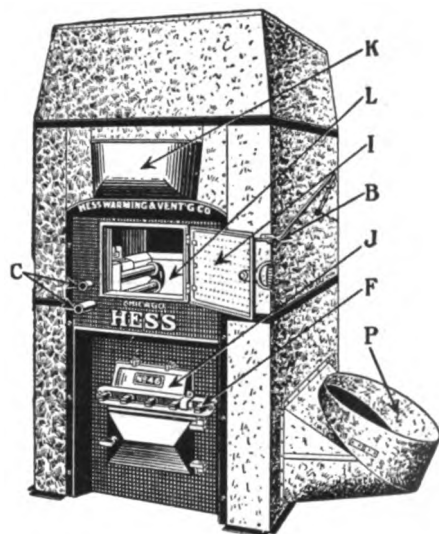
PIPE AND PIPELESS

Never were so many good features combined in any furnace, to result in economy and cleanliness, durability and efficiency.



- A. The low fire door, thirty inches from the floor—no high lifting of fuel.
- B. Automatic action between fire door, direct draft and check draft. When you open the fire door, the direct damper opens and the check draft closes. This prevents outpouring of smoke into the cellar when you feed the fire.
- C. Convenient and efficient water coil, for constant supply of hot water.
- D. Direct draft outlet in most effective position, operating with the fire door or independently.
- E. Air-check draft—chain-operated from floor above.
- F. Large grate area with separate grate bars—suitable for any kind of fuel—fine mesh for slack or lignite—coarser for hard or soft coal or coke—a solid plate covers them for burning wood.
- G. Smoke outlet at bottom of a large settling chamber. Hot smoke rises; the cooler portions are heavier and drop. We remove the smoke, while retaining and preventing loss of heat.
- H. A smooth floor at the bottom of settling chamber. Soot and ashes cannot lodge elsewhere and the heating surfaces remain clean. No flues to clog.
- I. Fire door plate perforated—to spray fresh air over the fire—

- J. Damper lift door—operating with chain from floor above. Regulates draft perfectly.
- K. Large water pan—where the water heats and evaporates rapidly, maintaining proper humidity.
- L. Thick fire brick lining; retains proper heat for combustion of cheap fuels. Installed and repaired through the fire door—no dismantling of pipes and furnace to repair a HESS.
- M. Large smooth rectangular ashpit. Close to the front and easily cleaned.
- N. Secondary casing next to the outer galvanized casing—prevents loss of heat in cellar.
- O. Smoke pipe outlet—straight and direct. No return flues to clog.
- P. Air supply collar—may be on either or on both sides of the heater.
- Q. Six inch air space under entire furnace. This means equal distribution of air for all pipes.



Last and Greatest of All. Every seam in the steel body enclosing the fire and ash pit is *riveted* and *welded*. It is gas and smoke tight, *absolutely*—and guaranteed to remain so *as long as the furnace shall stand*.

Write for illustrated book on heating and send in your sketches on our free plan and estimating service.

Hess Warming & Ventilating Co.

1229 R, Tacoma Bldg., Chicago

MEN WANTED

Efficient salesmen to manage branch sales and distributing offices we shall open May 1st in various large cities. Salary and profit sharing. Steady employment. No capital required; only experience, brains and energy.

A Radio Frequency Amplifier

Recommended Addition to the Radio Set Described in Previous Issues of Farm Mechanics for Those Who Live Far from Broadcasting Stations

By A. H. CARR

IF you have been following my instructions in FARM MECHANICS for the last few issues, you have noticed that I designed the "detector cabinet" so that a vacant space is left at one end. If you are living on a farm or in some small town far from a broadcasting station, by all means follow the instructions which I will now give you, because it is for your benefit I am writing this additional article.

As I was writing the instructions which you have already read I have been conducting experiment after experiment on what is known as a radio frequency amplifier. My experiments were made in an attempt to find a way in which to install this amplifier in such a way that it would not only be effective and inexpensive, but also very simple. In my experiment I have been very successful indeed, because I have found a scheme which meets all these requirements perfectly. It is so simple that even a small boy can install and operate it. It is also very cheap because the expensive apparatus which generally go with a "radio frequency amplifier" are entirely eliminated. The duty of a radio frequency amplifier is to strengthen the signals before they reach the detector and thus make them much louder. The effectiveness of the hookup which I will now describe is most gratifying.

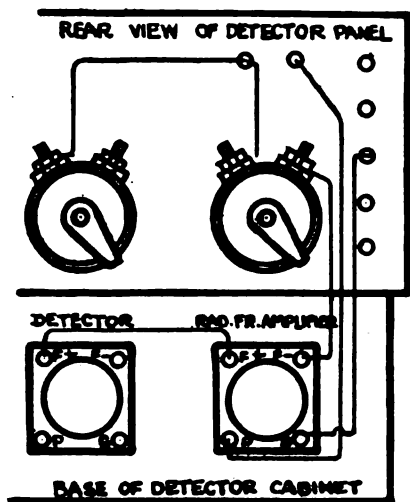


FIG.18A ADDITIONAL DETECTOR WIRING

Assembling the Parts

In the vacant space left in the end of the detector panel nearest the tuner drill holes for a rheostat. These can be drilled just as they were for the other rheostats so it is not necessary to give dimensions for them. Take the rheostat and the bulb and socket away from the second step amplifier. You will not need this amplifier at all unless you live within a few miles of a broadcasting station, so you might as well use the parts for your new amplifier.

However, if you live within a few miles of a broadcasting station you can use this second step also and the signals will be so loud that you can clamp one of your receivers to the tone arm of your phonograph and hear the music all over the room.

In taking the parts away from the second step amplifier be sure that none of the ends of wire are left so that they can touch each other.

In fact, after the parts have been moved over to their new place and fastened in exactly the position shown in Figure 18, the remaining changes are so simple and so few that they can all be made by simply referring to the diagram.

In Figure 18 you are looking at the back side of the two panels as if they had been bent over flat and level with the two bases. In the detector only the

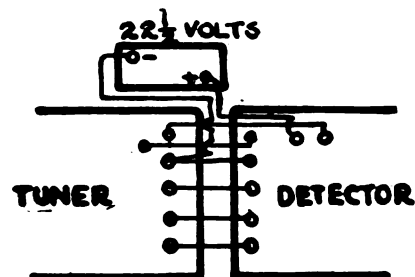


FIG.19 AMPLIFIER IN USE

extra wires are shown. As you will notice, these wires require three new binding posts placed as shown. But in the tuner the regular wiring is shown so that you can see at a glance that there is really only one change made. In order to make this change in the tuner cut out the wire between A and B and remove the section which is represented by the dotted line.

Now you have two loose ends and all that remains to be done is to connect No. 1 to binding post No. 1 and No. 2 to binding post No. 2. These two binding posts are extra, and are placed as shown. The same size wire should be used for this as was used for all the other connections (No. 18 insulated copper bell wire).

That is about all that needs be said about this radio frequency amplifier. The same procedure is followed in tuning as with the old hookup except that you will probably find that the controls will be in different positions from what they were. Remember that sometimes it is a good idea to turn the

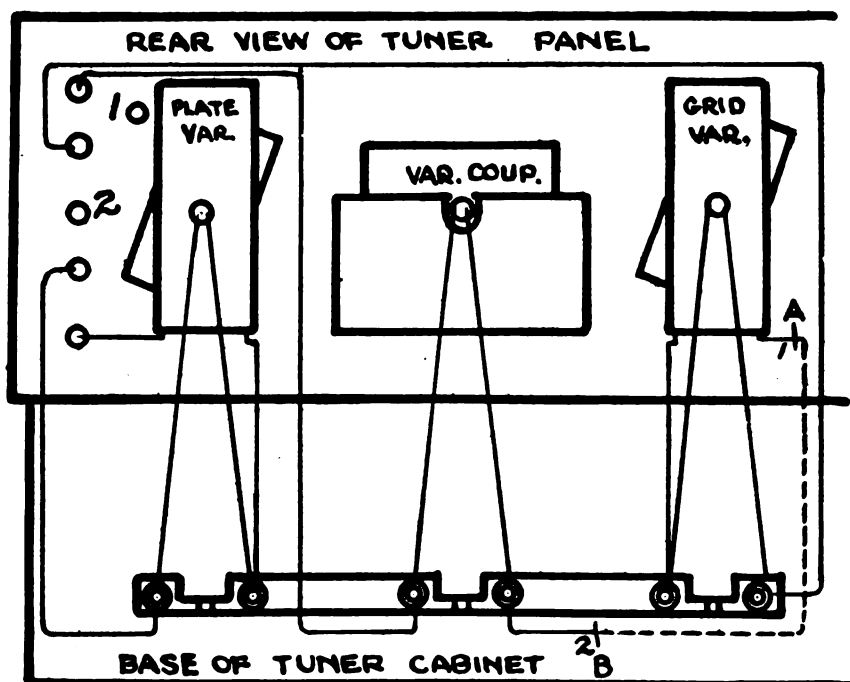
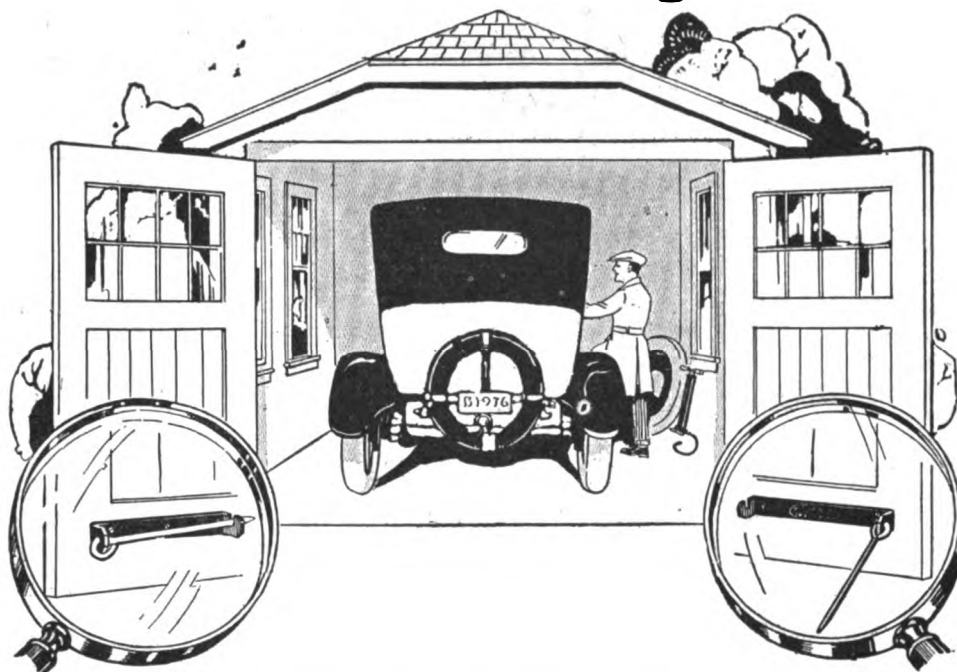


FIG.18 B CHANGE IN TUNER WIRING

You Have Been Waiting For These!



R-W DOOR DOGS

Easy to Attach and Handy to Operate

R-W Door Dogs are the simplest and most practical device so far perfected for preventing swinging garage doors from slamming shut. They can be put in place by anyone in five minutes, and once in place will last for a lifetime. Notice the illustrations in circles. To open doors, merely lift off pin with foot. Doors open easily to any point and stay there. To close doors, just lift pin with foot and drop into convenient slot. **R-W Door Dogs** save their cost many times in the course of the year by preventing damage to car or doors.

Have Many Uses Around the Farm

Any type of large swinging door is difficult to keep open, especially in windy weather. As **R-W Door Dogs** take a firm grip on any surface—concrete, wood, gravel, etc.—they can be used for many other purposes around the farm in addition to the garage doors. They will work equally well on the swinging doors of barns, implement sheds, etc. Quite often **R-W Door Dogs** are found to be just the thing to hold open large swinging gates. Take a look around today and you will probably discover the need for several sets of **R-W Door Dogs**.

Write for this
FREE Book

If you are planning alterations or new buildings, you will be interested in other R-W hardware specialties. Ask for our new book, "Hardware for the Farm and Home."

Richards-Wilcox Mfg. Co.
A Hanger for any Door that Slides

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RICHARDS-WILCOX CANADIAN CO. LTD.
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Each set of R-W Door Dogs is packed complete with screws in a neat carton. Price \$1.00 per set. If your hardware dealer does not have them in stock, ask him to order for you.



Quality leaves its imprint

dials clear round in tuning. However, be careful not to twist off the wires leading from the rotors to the binding posts on the axle support.

If by so turning a dial better signals are received, the wires leading from that rotor can be changed around and the dial can also be reversed. It is a good plan to try the rotors in all positions until you can determine, by experiment, which positions are best.

In this hookup about the only thing which you will have to buy extra will be a "B" battery of 18 to 22½ volts similar to the one you used for the detector "B" battery.

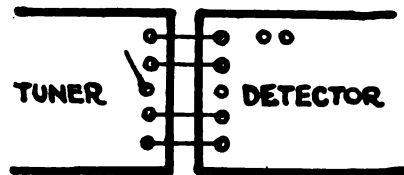


FIG. 20 AMPLIFIER NOT IN USE

Figure 19 shows how to make all the connections on the front of the panel and also shows how to connect the "B" battery. This battery can be placed behind the cabinets and the wires leading to it can be run between the ends of the cabinets.

If you should ever want to cut this amplifier out in order to save current simply disconnect the new battery and make the connections shown in Figure 20.

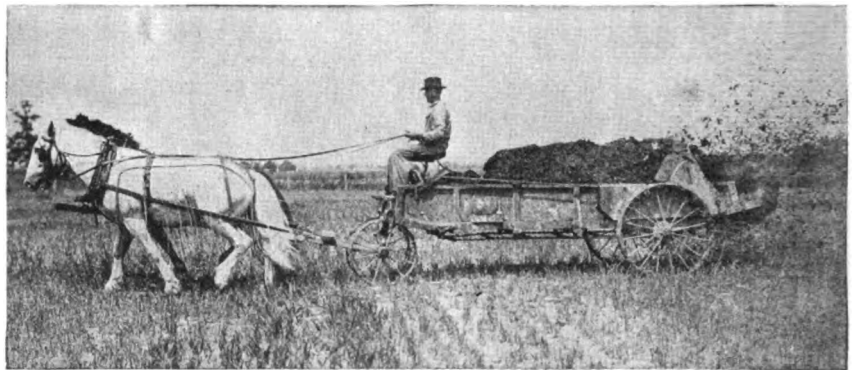


Spread Manure Thinly

EFFECTIVE results from manure are better obtained when it is spread thinly and evenly over the field. This is best accomplished by the use of a spreader, which breaks up the lumps, making the fertilizer more easily assimilated by the soil and promoting quicker decomposition.

The great value of the manure produced on practically all farms is becoming recognized and farmers are taking better care of the supply. Getting it on the fields as rapidly as it is produced prevents the waste of the plant foods the manure contains. Using more bedding to absorb the liquids also is being practiced, as by this means the elements that make the soil fertile are retained.

Manure contains all the elements that soils need. However, chemical analysis shows that the proportions of nitrogen, phosphorus and potassium are not correct, the amount of phosphorus being deficient. The Missouri Experiment Station recommends that 40 to 50 pounds of 16 per cent acid phosphate be added to each spreader load of manure. Many farmers add the phosphate by sprinkling



Using a Good Manure Spreader Insures an Even Distribution Over the Field.

a handful or two in each stall daily. In this way the animals tramp it into the bedding and get a more even distribution of it thru the manure.

Where a three or four year crop rotation is followed, the manure should be spread over the land that is going into corn or hay and not only the land that is to be sown to small grain, such as wheat or oats. Manure applied to wheat or oats land often causes the grain to lodge.



Improving Meadows and Pastures

ACCORDING to Prof. G. L. Schuster, University of Delaware, meadows and pastures properly fertilized are contributing factors to successful farming, whose importance is generally overlooked in this connection.

Almost no attention is paid to their fertilization. Professor Schuster points out that by the proper use of fertilizers the hay crop, usually a valuable one, may be materially increased. He also reports the interesting fact that the nature of the hay crop may be largely controlled by the use of one fertilizer or another.

Field tests were begun in 1913 to determine the best fertilizer treatments. On the basis of net profits from the crops, 125 pounds of acid phosphate and 50 pounds of muriate of potash proved the best treatment. A mixture of ni-

trate of soda and muriate of potash ranked next, with a complete fertilizer and sulphate of ammonia close thirds. It is noteworthy that plots receiving 150 and 300 pounds of nitrate of soda per acre made net losses.

Professor Schuster observes that if clover hay is wanted, from 125 to 300 pounds of acid phosphate and from 50 to 100 pounds of muriate of potash per acre should be used. From 100 to 300 pounds of sulphate of ammonia promotes the growth of timothy. Nitrate of soda is good for blue grass pastures, if used moderately.



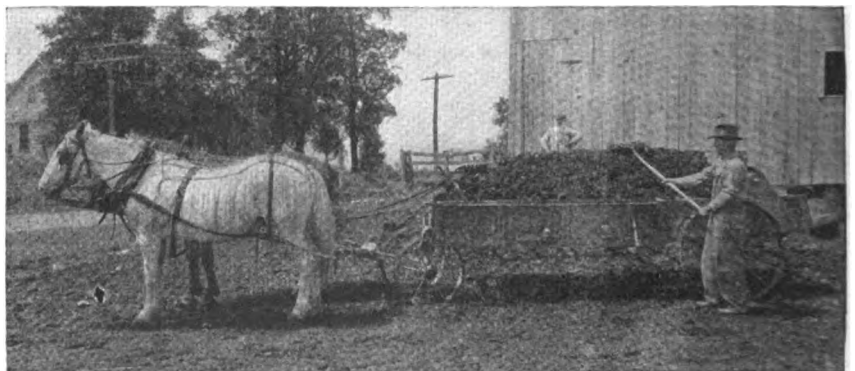
SOMEBODY says that each stump costs a farmer 25 cents a year to maintain. This may be true of stumps in cultivated land, but hardly true of land in permanent pasture, tho the stump occupies ground space that might be producing grass.



LAST year's summer dresses make neat kitchen curtains. Gingham, striped calico, or unbleached muslin may be used. They should not be heavy in weight to obscure the light. When desired, curtains may be half length.



E. A. TROWBRIDGE, of the Missouri Experiment Station, has conducted some invaluable investigations involving the feeding of heavy and light grain rations as supplements to silage and clover hay for fattening steers.



Taking the Plant Food to the Field in the Spreader, Thus Requiring But One Handling.

COST—FREE TO YOU!**New Enlarged Edition of "HANDY ANDY ON THE FARM"****Containing Complete Directions on
HOW TO BUILD A RADIO SET**

Handy Andy has given thousands of copies of His Book to readers of FARM MECHANICS. The first edition is exhausted. The second edition has been greatly enlarged and contains complete instruction on "How to Build a Radio Set." The instructions are accompanied by thirteen drawings, which make it comparatively easy for the builder to construct the set, which will enable the owner to receive messages from stations 1,000 miles away.

Handy Andy wants to give every subscriber to Farm Mechanics a copy of his new book free. All you have to do is to send in \$1 for a year's subscription. If your subscription has not expired it will be extended for one year, but your copy of "Handy Andy on the Farm" will be sent to you at once. It's Free.

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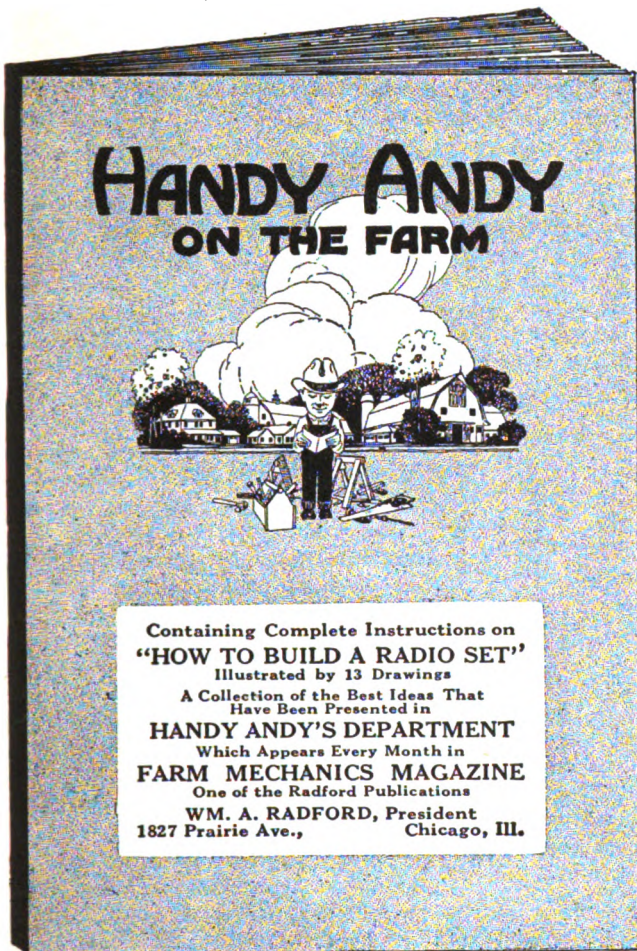
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Shaft Hanger That Is Simple to Make.
Force Feed Drill.
To Drill a Hole in Iron.
Disappearing Bench Stop.
Vise Jaw Faces.
Homemade Leather Punch.
Cup for Bit.
Repairs Gravity Oiler.
Preventing Shop Drawer Spills.
Tool Bag.
Cage for Twine Ball.
Mending Broken Strap.
Mounting a Grindstone.
Self-Adjusting Bench Clamp.
Sandpaper Block.
An Engine Protector.
Measuring Box of Concrete.
Use for Auto Tire Casing.
House for Pump Engine.

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Combination Bread Cupboard and Cutting Board.
A Hinge Broom Holder.
Table Adjustable in Height.
Oven for Oil Stove.
Ironing Board Cover.
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Useful Pin Cushion.
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Shop or Home Desk.
Rotating Foot Scraper.
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Handy Andy File.
To Tighten Clothes Lines.
Novel Seed Corn Tester.
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Convenient Combination Ladder.
Seed Potato Cutter.

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Rig for Oil Barrels.
Barrel Without Faucet.
Tool for Changing Auto Tires.
Tool for Fastening Tire Chains.
Piston Ring Compressor.
To Mount a Tire on a Demountable Rim.
Extension Oil Can.
To Jack Up Auto in Storage.
After the Collision.
Radiator Filler.
Re-Using Dry Batteries.
Swinging Door Fastener.
Cinder Remover.
Pull Out the Car.
Holds Door Partially Open.
Automatic Stop for Engine Pump.
Small Swinging Door.
Brake for Sled.
Grease Cup for Wagon.
Pipe Under Concrete.

Handy Andy in the Barn.
Barn Floor Scraper.
Ladder to the Hay Carrier.
Place for the Milk Sheet.
To Hold Feed Pail.
Liquid Manure Frame.
Feed Box Easy to Dump.
Medicine Funnel for Stock.
Self-Regulating Ventilator.
To Keep Milking Machine Clean.
Grain Bag Holder.
Handy Milk Stool for Strippers.
Ventilating Barn Window.
Hay Loft Tackle.
Swinging Door Holder.
Wire Line Holder.
Cement Hitching Weight.
Saves the Horses.
Holst or Derrick.
Hog Slop Storage Tank.

Handy Andy in the Chicken House.
Chicken Feed Silo.
Electric Egg Tester.
Dry-Mash Hopper.
Protects Water Supply.
Catch Chickens with Meat.
A Good Trap Nest.
Automatic Chicken Feeder.
Chicken Grit Feeder.
Poultry Fountain.
Barrel Chicken Coop.
Sanitary Water Fountain.
Brood Coops for Hen and Chickens.
Water for Poultry Yards.
Hog Feed Trough.
Corn Chopping Block.
Handy Andy in the Field.
Fence Wire Splicer.
Barbed Wire Reel.
Wire Fence Fastening.
Handy Method of Marking Posts.
For Pulling Fences Posts.
Binding Stick.
To Anchor Fence Corner.
A Salt Box.
Handy Band Cutter.
Useful for Cutting Bands.
To Keep Plow Out of Ground.
A Good Salt Box.
Adjustable Plowing Measure.
Eliminates Joints of Roller.
One-Man Crosscut Saw.
Making the Side Hide Easy.
Prevents Backaches.
Corn Uncoverer.
A Simple Scarecrow.
To Move Heavy Tile.
Handy Andy in the Yard.
A Homemade Ladder.
Concrete Cistern Cover.
Handy Mail Box.
Mail Box Signal.
Making Spring Flow Clear.
The Both-Way Gate.
Pigeon Cote Weather Vane.
Improved Seed Flat.
An Adjustable Gate.
A Simple Bird House.
Garden Row Coverer.
To Tether Cow.
Support for Kettle.
Saw Horse.
Quick-Acting Latch.
Recovers Pump Cylinders.
Two-Way Gate Hook.
Gate That Lifts and Falls.
Handy Andy About the Farm.
The "Slip".
Simple Corn Unloading Method.
Stocks for Cattle.
Catches and Holds Hogs.
Easily Made Shoveling Stand.
Easy Livestock Loading.
Lightens Killing Work.
Wagon Box Unloader.
To Oil Cultivator Blades.
End Gate Fastener.
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Hog House Door Covering.
Tongue for Buckle.
Easy Springs for Wheelbarrow.
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Square Hip-Roof House.
Home for the Work Stock.
Dairy Barn for 20 Cows.
Where the Corn Crop Is Safe.
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Tractor Pays on Missouri Farm

How a Young Howard County Farmer is Modernizing His Farm and Home and to What He Attributes His Success

By FRANK A. MECKEL

JOHN SKILLMAN, of Howard County, Missouri, who farms with a tractor and who keeps accurate accounts on his "iron horse," has just two items checked on the tractor's page in the ledger. The first item with which the tractor is credited is four years of hard work and on the other side the tractor is debited with an item of \$35 for repairs.

Skillman owns a 320-acre farm in the Missouri River bottom just across the river from the picturesque little town of Booneville. He rents another 200 acres of adjoining land. He grows wheat, corn, alfalfa and sweet clover and with the exception of the wheat, all of the crops are fed to live-stock. In his five years on this farm he has sold just 26 bushels of corn off the place, while he has bought more than five carloads of it to feed to hogs and cattle. Marketing the crops "on the hoof" is a hobby of John's. He has another hobby, Sweet Clover, but we'll come to that later.

Most of the heavy work on the farm is done by the tractor. Skillman uses it for disking, harrowing, cutting wheat, cultivating corn and for all the plowing. In the four years he has used it, he has plowed over 800 acres and cut practically all of his wheat. To date, he has not been obliged to take up any of the motor bearings and aside from grinding the valves and replacing a broken shaft in the transmission, he has had no repairs whatever. The item of \$35 covers all replacements.

Since the plowing can be done deeper and in less time with the tractor than

with horses, this constitutes its main job on the farm. The machine has been used for disking over 1400 acres in its four years of service which would tend to show that it is no "slouch" on this job. When harrowing, Skillman pulls three sections of harrow and makes short work of a large field. With the eight-foot binder, he can easily cut 20 acres a day while he was never able to cut more than 10 or 12 acres with a horse-drawn binder. The most extensive crop grown is corn, and while Skillman does not even attempt to cultivate all of the corn with the tractor, he keeps it moving right thru the cultivating season with the horses. Some of the neighbors in the valley tried to tell Skillman that corn cultivated with a tractor would not do as well as horse-cultivated corn. John says that he has heard some of the old boys who condemned the first iron plow on the theory that it would poison the soil, and he put these folks in about the same class. One piece of his corn this year produced over 90 bushels an acre and it happened to be the one piece which had been cultivated with the tractor the first three times and finally laid by with a horse-drawn plow.

"There isn't a job around the place that I can't do with my tractor if I am forced to it," says Skillman. "There are some jobs I don't do, but not because I can't, and what is more, I can do them as they should be done."

That is one farmer's opinion of a machine which has proven up for him.

The Sweet Clover part of Skillman's farm experience is interesting. He is

very enthusiastic about it. He says that he is what you might call a "Sweet Clover Fool," but it pays to be a fool sometimes.

Four years ago he tried to buy some seed at a local store but they all laughed at him. They knew of a Sweet Clover which was a noxious weed along the roads, but never thought anyone would be fool enough to try and plant any of it. Queer how long it takes to get the idea over into some localities.

In any event, Skillman secured a little seed from the agricultural college, and he sowed it. Some of the neighbors told him that nothing would eat the blamed stuff. One of them watched the hogs devouring the "weed" and still swore that they wouldn't eat it.

Skillman's farm has a number of patches of very tough gumbo scattered over it. He planted the Sweet Clover on one of these spots and the most noticeable part of the new crop was manifested the next season when he went to plow this land. Instead of the tractor getting down and snorting when it hit this soil, it went thru it as if the plows were turning so much sand. The soil had been made loose and mellow by the roots of the legume. Skillman planted more Sweet Clover that year and the next year he planted still more. He now has nearly 100 acres on it and uses it for pasture and hay.

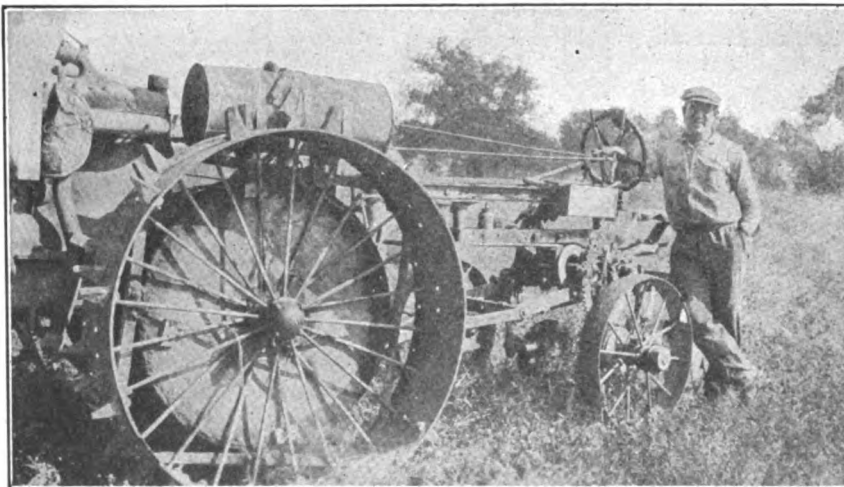
Last March he bought a carload of the sorriest looking steers that ever came out of Arkansas. He was almost ashamed to drive them home until after dark, so scrawny did they look, but he turned them into the Sweet Clover pasture and forgot about them. They averaged about 450 pounds each at that time.

Late in September I visited Skillman and saw these steers. They were then weighing close to 1,000 pounds apiece and they had not had a thing except Sweet Clover pasture and water.

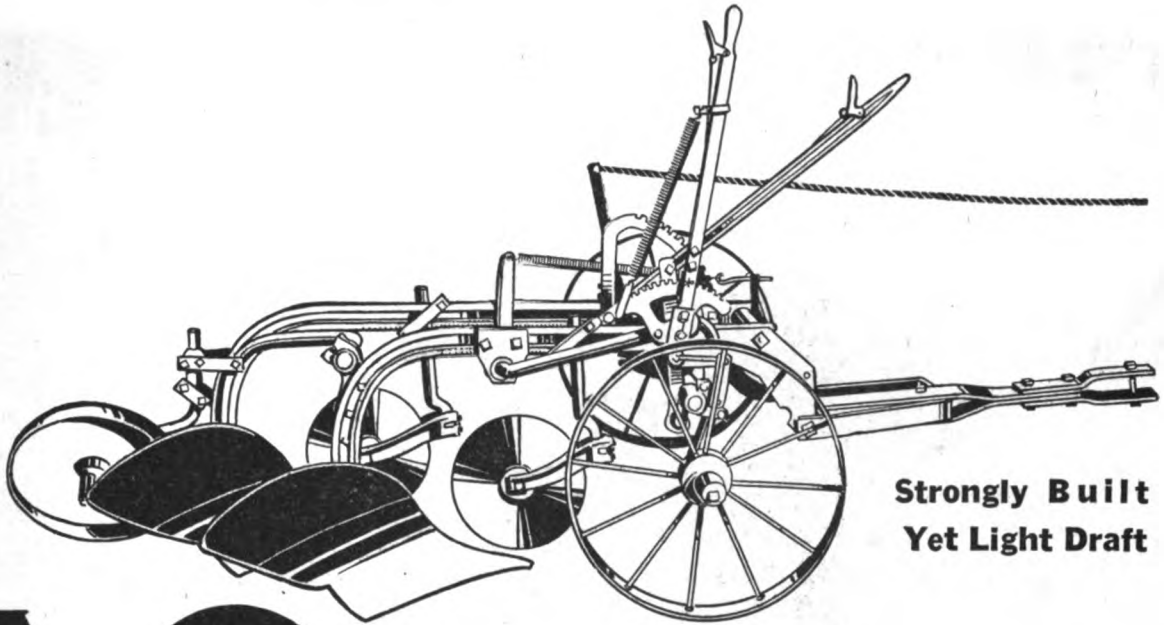
Skillman laughed as he said, "Maybe they won't eat the stuff, but if those steers didn't eat it, they got fat on wind and water."

But getting back to the tractor, which is the real item of interest in this story, it might prove of interest to know some of Skillman's methods and means of making a tractor work on such a small upkeep cost.

I asked him to what he attributed his tractor success. He remarked that he accounted for it in the fact that long



John Skillman and His Four-Year-Old Tractor That Has Cost Him \$8.75 a Year for Upkeep.



**Strongly Built
Yet Light Draft**

LA CROSSE^{NO. 12}

**The Lighter Running, Easier Operated,
Better Controlled Plow for use
with Light Tractors**

Adjustable to 10, 12 or 14 Inch Furrows

Allows you to adjust to any soil condition without loss of time or undue strain on equipment.

Adjustable Rear Wheel

Throws weight of plow and pressure of furrow slice on wheel rather than on landside, ensuring light draft and uniform furrows.

Emergency Hand Lift

Enables operator to lift the plow to full height when tractor is not in motion. Clears ground about 9 inches, prevents stalling in wet and heavy soil.

Flexible Hitch

Keeps plow in uniform depth even when traveling over uneven ground.

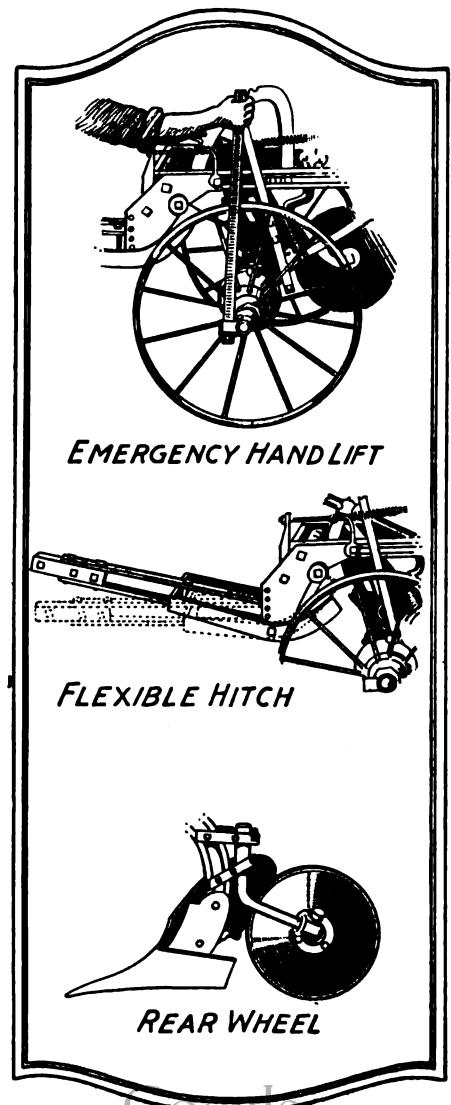
Convenient Depth and Levelling Levers.

Within easy reach of operator. Not necessary to get off of seat to make adjustment.

You can do a better job of plowing and do it easier if you use a La Crosse No. 12

DEALERS

La Crosse offers you a full line of tillage tools and drills. One make—one quality. Each superior in its field. This feature of the La Crosse agency permits saving in freight through carlot shipments without excessive investment in any one line of tools.



EMERGENCY HAND LIFT

FLEXIBLE HITCH

REAR WHEEL

LA CROSSE PLOW CO.
La Crosse, Wis.
"MAKERS OF LIGHT DRAFT PLOWS"



Not Only in Marketing, But in Farm Building Operations and all Farm Hauling the Motor Truck Is a Paying Piece of Equipment.

before he ever bought the machine he had made a study of it. He sent for descriptive literature and studied every chart and picture. He studied the instruction book and when he had an opportunity to go to the agricultural college for the annual Farmer's Week, he spent most of his time around the Agricultural Engineering Building studying the tractors in general but the one particular tractor that he liked best. When he got ready to buy, he bought that particular tractor and he had a world of information on it to start out with. There isn't a nut or a bolt on that machine that John Skillman couldn't find in the dark.

Another thing to which he attributes much of his tractor success is the fact that so long as he has owned it, no one else has ever operated it. He knows its ways and understands it, and he thinks that it is too much of an investment to entrust to any Tom, Dick and Harry that comes along. If any of the farm hands are going to "bust" anything around the place, it will be something other than John's pet machine.

Then there is the item of making necessary adjustments as soon as they become known. When the motor begins losing a little power, he does not keep its nose to the grindstone until the field is finished. He has found that he has less delay when he gets right at the seat of the trouble when it makes itself known. A leaky valve is re-seated the

same day that it is discovered and a dirty spark plug is cleaned at once.

All of Skillman's modernizing has not been confined to his farm alone. He has gone in for modernization of his home also. He lives in a very pretty little house which is equipped with a bath room and running water. A gasoline engine in the basement operates the pump which forces water into a large pressure tank. He also has a hot air furnace. When Skillman built the house he built for the future. The house is all wired for electricity and while the farm electric plant has not as yet been installed, they are all ready for it when that time comes, and that will probably be this year, for John has made some money on the Sweet Clover fed cattle this season, and he will invest in the plant as soon as he has the ready cash.

He's a great boy and that term is used advisedly, for he is only a big boy. He is still under 30 years of age and promises to be one of the best and most progressive farmers in the state of Missouri.



Hickory Handle Of Solid Wood Best

PICK out a hickory handle that has little porous wood compared with the solid portion and you will have one that is durable.

There are several simple and reliable

rules to follow in selecting hickory for a handle, they say.

Upon examining the end of the stick it will be seen that the wood is of two densities: a narrow band which is full of small holes, or pores, bordered by a wider band of solid wood. The porous portion of the hickory was grown in the spring when the growth was very rapid, while the solid-looking part grew during the summer. The greater the proportion of summer wood in any piece of hickory, the greater will be its strength. Therefore, the handle which has very little porous wood as compared with the solid wood is tough and good. The better handles have not more than twenty porous rings to the inch.

A good hickory handle has an oily or glossy side-grain surface when smoothly finished, and when it is dropped on end against a hard surface, it gives forth a clear, ringing tone. Hickory of poor quality gives forth a dull tone.

Contrary to general belief, the color of a hickory handle has nothing to do with its strength or toughness. When the hickory is young it is nearly all sapwood or white wood. As the tree becomes older, however, this sapwood becomes reddish in color and is called heartwood. A half million tests made by the United States Forest Products Laboratory at Madison, Wis., show that the strength of the hickory is not lessened when the sapwood changes to heartwood.



Stands Rigid Inspection

350,000 Burd Piston Rings were recently tested by one of the leading manufacturers of high grade motor cars.

This factory is conceded to have the most rigid system of inspecting and testing piston rings ever devised by automotive engineers.

There was not a single rejection. Every one of the 350,000 Burd Piston Rings met every requirement of the rigid tests which were made by the engineering and inspection departments.

This remarkable demonstration of the uniform quality of Burd Piston Rings seems conclusive evidence of their superiority. But the fact that this manufacturer placed an additional order for 500,000 Burd Piston Rings—after having made the most exacting tests which could be devised—proves beyond question that Burd Piston Rings excel in quality, accuracy, uniformity and efficiency.

All Reliable Jobbers Sell Burd Piston Rings

Complete stocks at distributing points throughout the United States and Canada, enable us to make immediate shipments—and gives satisfactory service. Ask your jobber, or write for prices, discounts, and complete information.

BURD HIGH COMPRESSION RING CO., Rockford, Ill., U. S. A.

Get Off the "Tack of Discomfort"

Modern Conveniences in the Home Mean Happiness and Contentment and a Better Home Atmosphere

By F. J. St. JOHN

AN ugly hound pup, belonging to a country storekeeper, was reported, the other day, to have been sitting on the porch in front of the store and lifting up his voice in a succession of prolonged and peculiarly mournful howls.

Somebody asked the storekeeper the reason for this evident sorrow, so painfully manifested by his pup.

"Oh," said the storekeeper, "he's just settin' on a tack and he's too durned lazy to get up off of it."

What would you think of the mental attitude of a man who sat on a tack and who was too unmindful of his personal discomfort to get up? Or of the man who found himself in any uncomfortable situation and, having the means of improving it, yet was content to sit tight in the midst of his discomfort and refrain from the effort that would bring him relief and ease and comfort?

Now wait. Don't pass judgment too hastily. While that pup couldn't personally have given you any reason for persisting in his foolishness, sitting there and lifting up his voice about the trouble that stirred his soul, mankind, nine times out of ten, will give you a reason, or an excuse for abiding in his pain and sorrow—or for sitting on a tack when there is a comfortable rocking chair with a thick, soft cushion within easy reach. Some of these excuses may sound pretty plausible, too.

If you analyze the situation, however, you will find, finally, that regardless of the excuse, the man is suffering, or his family is suffering, where otherwise they might be comfortable and happy. And, when you get that far you are mighty apt to conclude that the man had better try, for his own sake and for his family's sake, to be happy instead of miserable. For happiness and comfort, in the last analysis, are worth more than all other considerations that anybody can entertain. In fact, these are the final aim of human endeavor, tho we may have different names for them and tho we may, temporarily, mistake the means to happiness for happiness itself.

We often make this mistake in regard to our home life, and we often encounter hardships in the life of the farm which are unnecessary and which could easily be exchanged for something more pleasant, if only we could scare up the courage to do a little trading when we have something that we know isn't bringing us pure and unadulterated joy: Like trading a squeaky pump at the big watering trough, and two or three hours a day wrestling with a pump handle, for one of those electric water systems that will automatically pump barrels and barrels of water every day without an ounce of effort on the part of any member of the farmer's family; or like trading a kerosene lamp and uncertain light on the reading table for a bright electric light

in the reading lamp, with plenty of light for everybody, just by the mere act of flicking on an electric switch.

How about the housewife who cleans and fills a battery of kerosene lamps and lanterns every day or two, in order that the family may have light after a sort? Wouldn't she be happier if she could trade off the whole outfit for an electric lighting system that would give her and her family more light and better light, without any of her hard work? Incidentally she had better hold on to the kerosene can when she starts trading, for it will hold the fuel for the electric plant and somebody will probably have to pour a little kerosene into the fuel tank a couple of times a week. But that is a very mild sort of exercise, compared with the frequent sessions that must be held with the lamps and lanterns of the old days.

Again, speaking of the housewife, wouldn't she be better off to trade her broom and the hours she spends sweeping and dusting for the mild exercise, the short hours and the pride and pleasure she will experience from pushing around one of these electric vacuum sweepers? Ask any housewife who has tried both ways. She'll give you the answer. And ask her about trading back her electric iron and her present comfort on ironing day for the old battery of flat irons heated on top of the kitchen stove and carried back and forth between stove and ironing board.

Then washday! I have no idea how many miles the washboards of America would reach if laid end to end across the country, but I suspect they would represent more miles of aches and pains and suffering and skinned knuckles and rebellious sentiment than could be exemplified by any other collection of tools of trade that could be gotten together. And what a revolution it would mean and what a clearing of domestic atmosphere would be accomplished if these old washboards could be traded off for the modern washday equipment which the housewife of today can use, if somebody will just stop wailing about their troubles and move over onto the cushions of ease and comfort! Put electricity into the home—and an electric washer. Let the wife load it with clothes and hot suds, then move a switch and watch the washing go on. Turn another switch and let electric power do the wringing. Let her realize that for every one of the old, hard steps in the washday of the old days of doing it by hand, there is now a step where



Running Water Is Right at Hand When Electric Power Is Available to Operate a Water Pressure System.



PERMANENT PRODUCTS 100 YEAR CORN-CRIBS

THE SOLUTION
OF YOUR CORN-CRIB PROBLEM
FOR ALL TIME

PROVIDING the best ventilation, assuring the driest contents, there is no better corn-crib satisfaction than the Permanent Products 100-YEAR CORN-CRIB. It is the strongest, most permanent and least expensive crib to be had.

RAT PROOF

Built of concrete and steel. Openings for ventilation in walls too small to admit rats. Government reports show 15% of corn crops are consumed by rats. Use one of our Rat-Proof cribs and save that 15%.

FIRE PROOF

Our construction leaves nothing exposed to catch fire. Don't invest money in buildings that burn down in a few minutes. Carry your own insurance by erecting one of our Fire-Proof corn cribs.

RAIN PROOF

Openings in staves slant down towards the outside. Rain and snow are drained away from corn, thus providing best protection from storms. Have a dry crib.

WIND PROOF

Concrete staves in circular structures have been used for many years with success. They have been proven to be the safest buildings in strong winds. Invest in our Wind-proof cribs.

BULGE PROOF

Heavy steel frame-work and hoops hold all walls rigid. Either or both sides can be filled to the roof safely. Ample strength is provided at every point. Select a crib that does not Bulge.

See Page 179

PERMANENT PRODUCTS COMPANY.

15th Floor Marquette Bldg., CHICAGO, ILL.



Good Light and Electric Power to Operate the Sewing Machine Make Dressmaking Easier.

electric power does the work, faster, cleaner and with immeasurably less work. She'll not linger long in making up her mind to join the ranks of those who are literally enjoying the modern washday and there'll be another washboard thrown into the discard—relegated for all time into the limbo of useless and forsaken things.

And so one might go on, instituting comparisons and emphasizing the advantages that come from using modern equipment whenever it is possible—and seeing to it that it is possible.

But there is another angle to the matter that I find difficult, somehow, to put into words or to assist the reader to visualize. This is the sense of satisfaction—the peace of mind that steals over everybody after they have risen up from their seat of discomfort and moved over into the broad, easy environment of comfortable, modern living.

The person who is uncomfortable physically is uncomfortable mentally, and he or she will make those around them uncomfortable. Just as truly, those who are easy in their minds, because of the com-

fort their bodies enjoy, are going to contribute a whole lot to the joy and comfort of those around them.

Where do the young folks come from that flock into the cities of this country every year? Somebody has figured that the three thousand agricultural counties of this land give up an average of ten each or about thirty thousand young men and women from off the farms every year. The ten-year figures of the last census make it seem more than even that number are lost each year to agriculture and go to throng the crowds of labor-seekers in our great cities.

The assertion we want to venture, however, is that the bulk of these young folks come from homes of dissatisfaction and unrest. It's hard for a young man or woman to go away from a home where everything is bright, cheery and congenial, where there is no drudgery, where there are modern conveniences and where smiles and songs and love are as common as the air that is breathed. But where gloomy surroundings, overwork, inconvenient, insufficient equipment try the temper, there is nagging, fault-finding, misunderstanding, unrest and an easy breaking of home ties. They are pretty well frazzled, anyway, by the time the boy or girl gets large enough to want to spread their wings a little and it takes only a little tug to snap them entirely.

In regarding the fate of the young folks, tho, don't let's lose sight of the older ones. They are the folks who must stand the real brunt of the hard knocks and very likely the folks who will experience the biggest relief and the greatest joy over being able to rise up off of the tacks of discomfort and inconvenience.

They are left with a still greater burden when the young folks leave them and electric service has just as great a message for them as it has for the farmer who has seen the light and put in his electric plant before the children get discouraged and fled the home nest.

The farmer and his wife who have been left alone on the farm and who are confronted with the problem of retiring will often find, in the introduction of electricity, just the finest kind of answer to their problem. As a matter of fact, after they have the place all lighted up with electricity, with running water for all conveniences at the house and barn, with a motor or two to do those tasks that used to be done with a crank, they generally find that there is no problem any more at all. For the barn chores are lightened thru the aid of electric light and power, and electricity wields its influence at the house, thruout the day and into the night. Mother has more time on her hands, actually, than she and the girls used to have, when everybody was at home and pretty soon she and father begin to appreciate the



She Has Thrown Away the Broom and the Dust Pan—Electricity Operates the Sweeper.

Make Your Tractor Your Willing Servant

Chart of Recommendations

Trade Name	Motor Oil	Trade Name	Motor Oil
Akron	H.	Magnet B.	H.
Allis-Chalmers—All Models	H.	Mark VI Once Over	H.
Alfred	H.	Midwest	E. H.
All Work—Both Models	H.	Minneapolis, 12-25 and 17-30	H.
Andrews-Kinkade	E. H.	Minneapolis, 22-44 and 35-70	E. H.
Appleton	H.	Mogul	H.
Armington	H.	Mohawk	H.
Aultman-Taylor, 22-45	E. H.	Monarch-Industrial	H.
Aultman-Taylor, 30-60	E. H.	Nelson Junior & Senior	H.
Ayltman-Taylor, 15-30	E. H.	Ohio	H.
Automotive	H.	Oil Gas, 20-42	E. H.
Avery Model C	H.	Oil Gas, 25-50	E. H.
Avery, 8-16, 12-25, 25-50, 14-28, 18-36, 40-65	E. H.	Parrett	H.
Avery Tractor Runner	H.	Peoria	E. H.
Bates	E. H.	Pioneer, 18-36 and 30-60	E. H.
Bates Steel Mule—All Models	H.	Plow Man	H.
Bear	H.	Porter	H.
Best Tractor, 30	E. H.	Port Huron	H.
Best Tractor, 60	E. H.	Prairie Dog, 10-18 and 15-30	H.
Big Farmer	E. H.	Quadpull	H.
Big Four, E-B	E. H.	Reed	H.
Billwell	H.	Reliable	E. H.
Boring	H.	Res.	H.
Burnol	E. H.	Rumely Oil Pull, 12-20	E. H.
Capitol—All Models	E. H.	Rumely Oil Pull, 16-30	E. H.
Case, 10-18 and 15-27	H.	Rumely Oil Pull, 20-40	E. H.
Case, 22-40	E. H.	Rumely Oil Pull, 30-60	E. H.
Case, 20-40	E. H.	Russell "Big Boss," 20-35	E. H.
Cletrac, 9-16 and 12-30	H.	Russell "Giant," 30-60	E. H.
Coleman	E. H.	Russell "Little Boss," 15-30	H.
Common Sense	H.	Russell "Junior," 12-24	H.
Dakota	H.	Samson Model M	H.
Dart Blue "J"	H.	Savage A.	E. H.
Depue	H.	Shawnee, 6-12 and 9-18	H.
Dill Harvesting	M. H.	Shelby Model C	H.
Eagle, 12-22 and 16-30	E. H.	Shelby Model D	E. H.
E-B, 9-16 and 12-20	H.	Square Turn	E. H.
E-B, 16-32	H.	Stinson Heavy Duty	H.
Farm Horse	E. H.	Titan	H.
Farquhar, 15-25	H.	Topp-Stewart	H.
Farquhar, 18-35 and 25-50	H.	Toro	H.
Fordson	H.	Townsend—All Models	E. H.
Flour City Junior, 20-35	H.	Traylor	H.
Flour City, 30-50 and 40-70	E. H.	Triumph	E. H.
Fox	E. H.	Trundar	H.
Four Wheel Drive Fitch	E. H.	Twin City, 12-20 and 20-35	H.
Frick, 12-20	E. H.	Twin City, 40-45	E. H.
Frick, 15-28	H.	Twin City, 60-90	E. H.
Good Field	H.	Uncle Sam—All Models	H.
Grain Belt	H.	Vim	H.
Gray	H.	Wallis	H.
Great Western	H.	Wallis Cub	H.
Hart-Parr—All Models	E. H.	Waterloo Boy N	H.
Header—Model "C"	H.	Wellington, 12-22 and 16-30	E. H.
Header—Model "D"	H.	Wetmore	H.
Holt Caterpillar, T-35	H.	Western	E. H.
Holt Caterpillar (5 Ton)	H.	Wheat	E. H.
Holt Caterpillar (10 Ton)	E. H.	Whitney	E. H.
Holt Caterpillar (15 Ton)	E. H.	Wichita	H.
Huber Light & Super Four	H.	Wilson	H.
Illinois Super Drive, 18-30 and 22-40	E. H.	Wisconsin, 16-30 and 22-40	E. H.
Indiana, 5-10	H.	Yuba Ball Tread—All Models	H.
International, 8-16	H.		
International, 15-30	H.		
J. T.	E. H.		
Keck Gonnerman	E. H.		
Kinnard	H.		
La Cross	H.		
Lauson, 12-25 and 16-30	H.		
Leader, 18-36	H.		
Leader, 12-18 and 16-32	E. H.		
Leader, 18-35	E. H.		
Leonard Four Wheel Drive	H.		
Liberty	E. H.		
Little Giant A. & B.	H.		
London Model 18, 12-25	H.		

N. B. For recommendations or grades to use in automobiles and trucks consult chart at any Standard Oil Co. (Indiana) station.

2975

WHEN the tractor is needed nothing can take its place in minimizing time and labor. But the tractor must be lubricated properly to keep it in prime working condition, and there are numberless parts to be considered. Guess-work invites disaster and a take-a-chance attitude may call a halt at the most critical period of the year's farming.

The harvesting and planting seasons are short at best, and if you would insure against unnecessary and costly repairing at this time

Use

Polarine
THE PERFECT MOTOR OIL

Made in Four Grades

Medium Light
Medium Heavy Heavy
Extra Heavy

Polarine seals your pistons against loss of power and enables you to get a maximum of service from your fuel. The Standard Oil Company (Indiana) lubricating engineers in making Polarine have taken into account clearance between the pistons and cylinder wall, method of cooling, lubricating system used, etc.

The Standard Oil Company (Indiana) staff of lubricating engineers recommend Polarine as the correct oil for your tractor. This recommendation is authentic and based on scientific findings of the finest petroleum chemists.

Polarine is a Perfect Motor Oil, and is offered to you as such. Consult the chart to the left. It represents the correct grade of Polarine for every make and type of tractor.

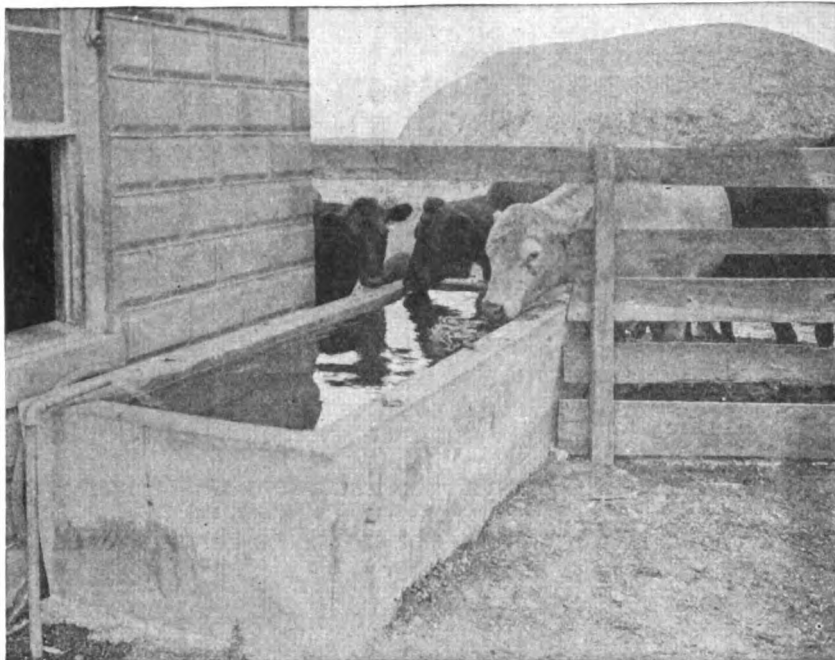
Standard Oil Company
(Indiana)

910 So. Michigan Ave.

Chicago, Illinois

KEY

M. L. — Polarine Medium Light.
M. H. — Polarine Medium Heavy.
H. — Polarine Heavy.
E. H. — Polarine Extra Heavy.



A Good Supply of Fresh Water from the Electrically Operated System.

new atmosphere that has appeared in their home. They would understand, in a minute, what I have been trying to put into the words about the "sense of satisfaction that steals over everybody after they have moved into the easy environment of comfortable, modern living." For they have created their new environment and they are enjoying comfortable, modern living. And that's the environment that ought to be created about every farm home. The farm home that isn't modern is clinging to the equipment and the methods that were the best they had a few years ago. But the best of a few years ago is not the best today. "The world do move," and the way has been made plain for improvement in country living, the same as in that of the city.

There is no excuse, then, for those of us who live in the country to be hampered by the inconveniences of country life of twenty years ago. We have really nothing to lament over, so far as home environment goes. For electricity opens the way to practically every feature of modern living that mankind enjoys and electricity is one of the easiest things that any farm home can secure for its comfort and material benefit.



Why Is a Calf Club?

"WHAT does all this noise I hear about calf clubs mean?" asked a farmer of the New Jersey State College dairy extension specialist.

"It is true that the calf clubs have made a lot of noise. People are hearing about them and quite naturally asking questions," M. H. Keeney, the specialist, replied. "This is as it should be, for the calf club movement is destined to bring

a new and brighter day for the young dairymen of New Jersey. Thru the calf clubs they are learning a great many things that will put dollars in their pockets when a few years from now these young men and women are farming for themselves.

"You ask 'What does it all mean?' It means we are 'Building for the Future' on the foundation of Better Livestock and Improved Dairy Practices.

"The boy or girl joins the club and buys a pure-bred tuberculin-tested calf, which is the foundation for a pure-bred herd which that boy or girl hopes to own some day. The boy or girl feeds and cares for the calf and comes to love this calf with an affection that develops within them a great liking and enthusiasm for the dairy business when it is associated with good pure-breds.

"They realize that with pure-breds there is something more to the dairy business than just making milk. Thru pure-breds they realize that it is possible for the farming business to give them money returns equal to what they can get in other lines of business in the city. They see something to the farming business that makes it worthwhile for them to engage in farming as a life occupation.

"Calf clubs have a regular organization, with officers elected by the members of the club. The meetings are conducted by the members themselves. Yearly programs are arranged so as to make each meeting have a real value, teaching the club members the fundamentals and the finer points of the dairy business, particularly the pure-bred business.

"Thru the clubs, a common community interest is developed, a spirit of co-operation and of good will which is

not limited to the club members alone, but which is contagious and is caught by the older people as well."—Issued by the State College of Agriculture, Jan. 2, 1923.



Shipping Fever of Cattle And Sheep

AS COLD weather advances many cattle and sheep while passing thru the large stockyards contract a disease known as hemorrhagic septicemia, stockyards fever, or shipping fever. The losses from this disease are felt most heavily by those who buy stockers or feeders, altho milking cows and sheep may also become affected. The disease is a poisoning of the blood, wherefore it often runs a short course and quickly proves fatal.

While the Bureau of Animal Industry is endeavoring in every way possible to combat the spread of this disease, it sometimes happens that a shipment of apparently healthy cattle or sheep, shortly after arrival in a feed lot, will develop symptoms that will cause the owner to believe the animals are affected with pneumonia.

The affected animals as a rule refuse feed. There is quite often difficulty in breathing and coughing may occur. There may be a discharge from the nostrils and strings of mucus may hang from the mouth. The animals lose flesh very rapidly, their abdomens becoming puffed up and the eyes sunken.

Disinfection of stockyards which may be effective temporarily can not be relied upon to protect the animals shipped to farms for feeding. The vaccination of susceptible animals from stockyards has been suggested, therefore, as an effective means of controlling the disease. These vaccinations should be made by a veterinarian and only fresh, tested vaccines or bacterins should be used. Such cattle and sheep should not be allowed to mingle with other animals on the farm until 30 days have elapsed.

The United States Department of Agriculture has issued a farmer's bulletin treating of hemorrhagic septicemia, which will be mailed to those interested on application.



WHY stand on the cold ground hanging up clothes, when a rope and pulley from the kitchen or laundry window to a nearby tree or the corner of the garage can be rigged up in half an hour?



HAVE those gayly colored curtains which were going to make winter seem shorter gone up in your living room yet? A little planning and a package or two of dye, with what you can find in the attic will work wonders.

A MASTER STROKE

HERE, AT LAST, is the master stroke in the development of *PERFECT* lightning protection—the finishing touch that renders harmless the mightiest lightning bolt! And George E. Thompson, the man who has a "Never Struck" record on thousands of buildings protected with his World's Best System of Guaranteed Lightning Protection, has perfected this new 3-Way Connector and made it a standardized part of his New Improved Patented Perfection System.

The terrible destruction of lightning is going on every day—at the rate of \$1,000.00 an hour in the United States. Why take a chance, when you can now be guaranteed absolute protection? Protection is cheaper than rebuilding—you pay for it only once—and its cost is many times less than you would lose by fire, on a *fully insured* building.

The Master Feature—Thompson's New 3-Way Connector

1. Thompson's World's Best 3-Way Connector has two hollow 90-degree curved brackets, making an ideal path for carrying a lightning stroke from the top spire to the conductor, in place of a single square turn. It makes a solid 3-way connection at the most vital point in the system.

2. Thompson's 3-Way Connector has at its base a perfect contact, $6\frac{1}{2}$ inches in length, with the conductor, absolutely preventing any possibility of a weak or faulty connection. It makes what has been the weakest part of all lightning rod systems now the strongest part of the Thompson System.

3. Thompson's New 3-Way Connector is pure solid cast brass, extra heavy, and alone is equal in weight to a 5-foot top spire. This added weight at the base of the top spire insures a permanent and solid support.

4. Thompson's 3-Way Connector can be used with any height of top spire, high, medium or low. For low tops it is itself an excellent supporting brace. It is also adaptable to any type of T connection between top spire and lightning conductor.

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The Thompson System and Sales Service has proved a big money maker for many implement dealers. You know the farmers—have their confidence—they need lightning protection. Write today for the liberal Thompson proposition to dealers. It's a winner! Fill out coupon and pin it to your business letterhead.

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Write your address plainly in margin

FM 2-23

Taking the Work Out of Lifting

Jeff Hardy Learns Some Simple Engineering Principles and Applies Them

By BRUCE WHARTON

ONE morning recently my brother, Norman, and I came out of my timber into the west road and saw Jeff Hardy yanking at something with his four big Belgian horses. Norman is an engineer, and he hurried off headlong to the scene of operations with me tagging along behind.

Jeff was trying to pull the stump of the old wild cherry tree that used to stand in the corner of his east field. He shook

"Will you try my way? It won't cost you a cent unless you want it to." His eyes flashed with fun.

"Sure I will. I'd like to know how you can pull twice as much with the same horses."

"So we hitched up the Ford and went to town. At the hardware store Norman bought two triple blocks, 200 feet of $\frac{3}{4}$ -inch manila rope, and 50 feet $\frac{1}{2}$ -inch rope. The bill was \$18.85.

"Now, Jeff," he bantered on the way home, "this is a bet. If I pull that stump and prove that I'm right, you can buy this tackle at what

it cost. If it doesn't work that way I'll make brother a present of it."

"And I'll take it," I agreed, "for I know what it'll do."

Jeff didn't know what to say. "It's a lot of money—but I'll take the bet. But you have to show me how four horses can pull as much as, say, twelve."

Norman went to work whistling. He reeved the rope thru the pulleys and then laid the tackle out in a straight line from a telephone post that stood outside the fence. He lashed one block to the base of the post, and hooked the other one to the chain around the stump.

Jeff backed the team in and the free end of the rope was lashed to the double-trees. Norman told him to pull. The horses straightened out and weaved around a little. Then the stump started to give. It didn't take much more, and when the old thing stood on its edge Jeff came back and looked it over. He was whistling between his teeth, which showed that he was puzzled, and he scowled at the tackle, trying hard to figure out how it worked.

Norman was like a boy with a new red wagon. I knew we were in for an explanation, so we all sat down in the corner.

"You know how a lever works—a weight on the long end lifts a bigger weight on the short end. Well, this

tackle is just a system of levers. Each of those triple blocks has three pulleys in it, and each one is a lever, so there's six levers in the outfit.

"There's a rule

for it. The pull on the rope multiplied by the distance the horses travel is equal to the load multiplied by the distance it travels. There's two sides to it, and one side must always be equal to the other. Call one the pull side, and the other the load side.

"The pull will be in pounds and the distance in feet, so when you multiply them together you get a compound quantity called foot-pounds. It goes for all mechanical contraptions."

Jeff interrupted, "Why, I don't know how much the horses pulled, or how many feet they went, or anything."

"Well, this is just the rule I'm explaining. The reason why we pulled that stump with the tackle when you couldn't before, is that we made the horses travel farther. You noticed that. They got

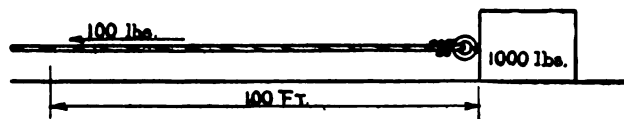


FIG. 1

hands with us and was glad to rest a little in the fence corner, for the horses hadn't budged the twisted old stump.

"Jeff," Norman said, "aren't you making a hard job out of that? You could do it easier."

"I might put on more horses."

"You don't need any more horses. But you can make the load less. That sounds funny, doesn't it?"

Jeff smiled at Norman. He thought he was joking, but he wasn't. Norman jumps at every chance to pass some of his engineering knowledge along to help someone else, and his visits always bring me some good ideas. He continued:

"You're pulling straight-away on a single line. If you had two pulley blocks in your rig you could pull twice as much. If you had two triple blocks you could pull six times as much. You'd pay for the outfit on this one job, and have it for any other job that came up."

Jeff took it as a criticism and got his back up a little. "How're you goin' to make the pull on that stump any less? It's in there hard an' fast, an' the only way you can make it any easier is to dig around it an' cut the roots."

"Well," Norman replied tactfully, "I merely wanted to help you. You aren't getting it out that way."

"I've hitched every way I know how."

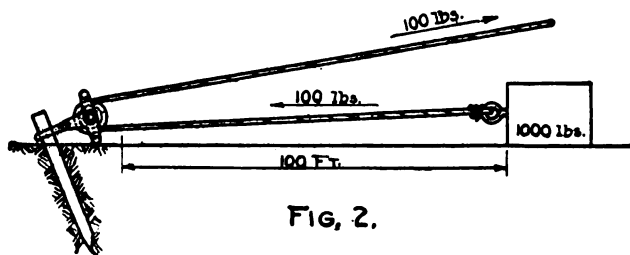


FIG. 2.

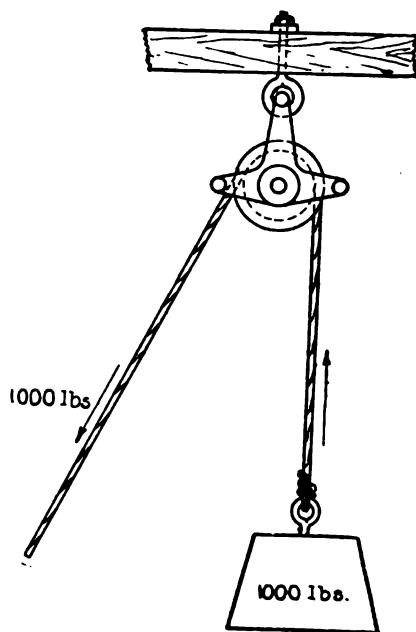


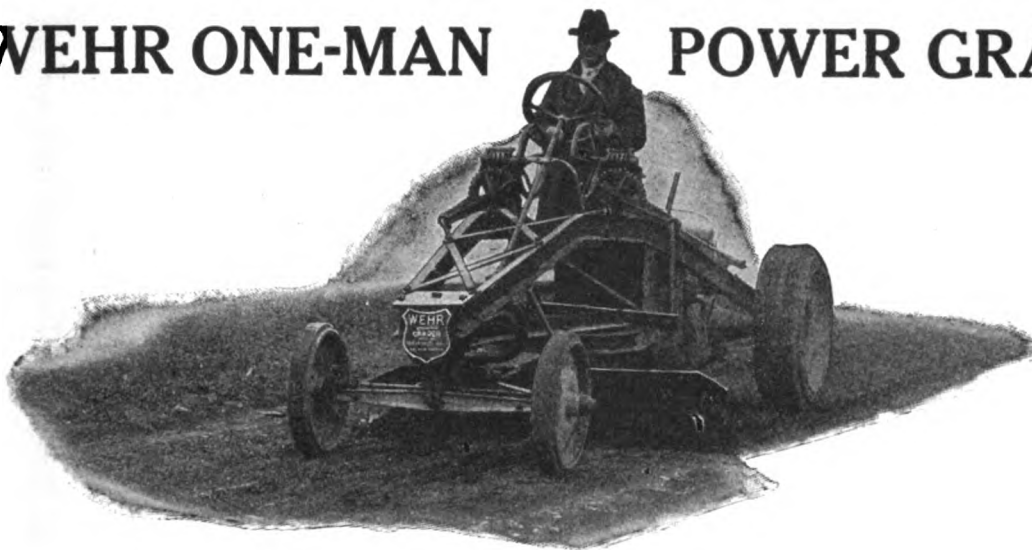
FIG. 3

started and were able to keep going. They traveled six times as far as the stump did, because there's six pulleys in the two triple blocks. They were on a big lever that was six times as long on one end as it was on the other.

"Suppose you had to drag a 1,000-pound load along the ground. (Fig. 1.) If you drag it 100 feet your work amounts to 100 feet \times 1,000 pounds = 100,000 foot-pounds. Of course the pull on a 1,000-pound weight on the ground wouldn't be 1,000 pounds, but we're just talking about the tackle.

"We might drive a stake out here (Fig.

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Now—a One-Man Fordson Tractor Road Grader at an astonishingly low price



The perfection of modern machinery—the road roller, the portable crushing outfit, the paving mixer, trucks and industrial locomotives have done much toward improving road construction and reducing the cost per mile.

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So announcement of the Wehr One-Man Power Grader is of vital importance to everyone interested in building and maintaining roads. It actually does the work of six horses and four men. It can be used every day in the year for grading and maintaining dirt, gravel or macadam roads, and for clearing away snow on highways and streets.

The Wehr One-Man Power Grader is used in combination with the efficient Fordson Tractor. The tractor and grader are quickly converted into a one-man operated unit. There are no holes to drill—just a matter of attaching and tightening bolts. The blade can be quickly raised, lowered or swung to either side or any angle. The clutch and gears are manipulated from the operator's platform by means of hand and foot levers.

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SPEEDS
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WHEEL BASE
—13 ft. 2 in. over all

**EXTREME WIDTH OF
GRADER**
—6 feet

RUBBER WHEELS
—Front 24 in. x $3\frac{1}{2}$ in.
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OVER-ALL LENGTH
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**APPROXIMATE WEIGHT
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(as shown) 7100 lbs.
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**ANGLE OF BLADE
TILTED**
—10 degrees.

We strongly recommend the
Wehr Throttling Governor—
to be used in connection with
our grader—so as to deliver
the Maximum power.



WEHR

One-Man Power Grader

Taking the Backache Out of Lifting

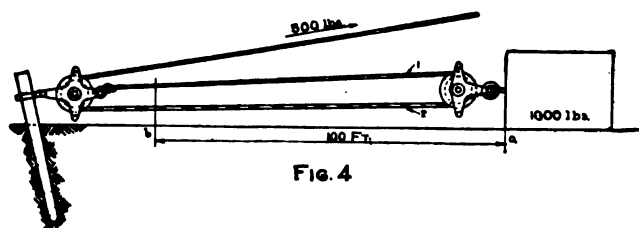


Fig. 4

2), and rig a pulley on it. On a big job we'd bury a log in the ground to hitch to—that's called a 'dead-man.' But one pulley doesn't help a bit. The end of the rope doesn't travel any farther than the load does. The work on the load side is just the same as in Fig. 1, and the work on the pull side must be the same. We'd merely change the direction of the pull.

"But here we can see something else. If you divide the work done on the load side by the number of pounds in the pull you get the distance the free end of the rope travels. Or, if you divide by the distance the free end of the rope travels you get the pull in pounds.

"Here it is in a different way:

$$\frac{\text{Load} \times \text{Its Distance}}{\text{Travel of free end of rope, in feet}} = \text{Pull, in pounds.}$$

$$\frac{\text{Load} \times \text{Its Distance}}{\text{Pull, in pounds}} = \text{Travel of free end of rope, in ft.}$$

It works the same for the load side.

$$\frac{\text{Pull, in pounds} \times \text{Its Distance}}{\text{Travel of the load, in feet}} = \text{Load, in pounds.}$$

$$\frac{\text{Pull, in lbs.} \times \text{Its Distance}}{\text{Load, in pounds}} = \text{Travel of the load, in ft.}$$

"Does it work the same for lifting a load as for dragging it?" Jeff asked.

Norman drew a sketch like Fig. 3. "Just the same. Here is your load of 1,000 pounds. If it is lifted 10 feet you do—10 feet \times 1,000 pounds = 10,000 foot-

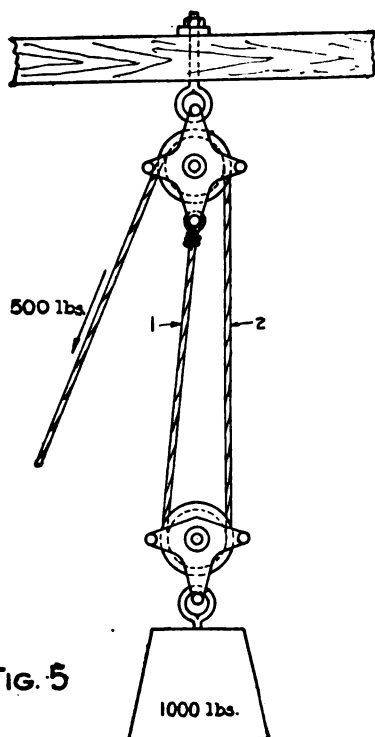


Fig. 5

"The reason why I asked is that I've got a lifting job over at the barn. I don't know how to do it." Jeff saw possibilities of real assistance.

"Fine We'll go over and do it as soon as we get thru with this. Now we'll take this the way it was before and put another block in the outfit. (Fig. 4.) That gives us two parts of rope, '1' and '2,' coming off of the block attached to the load. You don't count the free end.

"Now suppose that you were to push this load along the ground from 'a' to 'b,' 100 feet. We'd have 100 feet of slack in '1' and another 100 feet in '2.' That makes 200 feet together. To take up that slack the free end of the rope will have to travel 200 feet. The load moved only 100 feet. The work on the load side is 1,000 pounds \times 100 feet = 100,000 foot-pounds. On the pull side the distance is 200 feet, so the pull is only half as much. The work on the pull side is 500 pounds \times 200 feet = 100,000 foot-pounds.

"Or, since we know how far the free end of the rope traveled, we can find the pull in pounds in another way:

$$\frac{\text{Load, 1,000 pounds} \times \text{Distance, 100 feet}}{\text{Travel of free end of rope, 200 feet}} = 500 \text{ lbs.}$$

"There is the whole thing. By pulling twice as far you can pull twice as much."

Jeff looked it over in amazement. It was almost unbelievable.

"Put that one up in the air for lifting," I suggested.

"It's just the same," he said as he drew another sketch (Fig. 5). "Suppose you lift the 1,000 pounds only 10 feet. The work on the load side is 1,000 pounds \times 10 feet = 10,000 foot-pounds. The free end of the rope travels twice as far, or 20 feet so the pull is only 500 pounds; 500 pounds \times 20 feet = 10,000 foot-pounds. Put it the other way:

$$\frac{\text{Load, 1,000 pounds} \times \text{Distance, 10 feet}}{\text{Travel of free end of rope, 20 feet}} = 500 \text{ lbs.}$$

"There is a short cut that we can use. For the pull in pounds divide the load by the number of ropes leaving the bottom block. For the distance the free end of the rope will travel multiply the distance the load is lifted by the number of ropes leaving the bottom block. When you are dragging something the 'bottom block' is the one attached to the load.

"Now here are these triple blocks. They

pounds of work on the load side. Since the end of the rope travels just the same distance as the load the pull in pounds must be the same. And the amount of work is the same."

can be rigged right or wrong. This way is wrong (Fig. 6). The third pulley in the bottom block is not used. Consequently, when lifting a load of 1,000 pounds you can divide by only five ropes, for only five leave the bottom block. That makes the pull 200 pounds. But if it is rigged right (Fig. 7), there are six ropes leaving the bottom block, and the pull is one-sixth, or 166⅔ pounds." (In the last two illustrations the pulleys in the blocks are drawn in different diameters to show them plainly.)

We dropped the discussion there and went over to the barn. Jeff was building an addition out of concrete blocks, and had a heavy oak beam to go up across the top of a wide door. It would be a dead lift of about ten feet. Norman looked it over for a few minutes, and then had us help him drag in a long stick

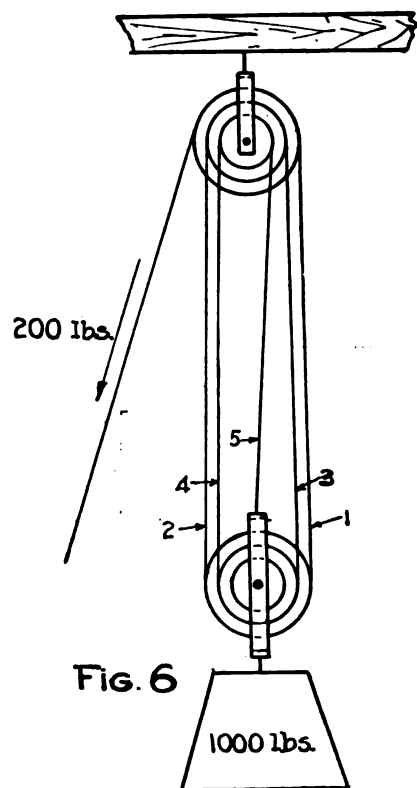
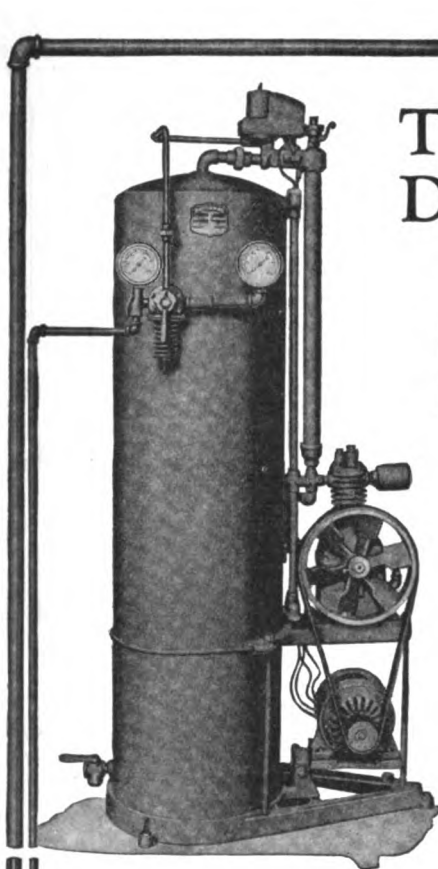


Fig. 6

of timber. We slid the butt of the stick thru the door of the addition, against the foundation of the barn. From the haymow window Jeff let down a rope which Norman tied to the timber close to the outer end. Then he lashed one of the triple blocks to the extreme end of the timber.

I went up and helped Jeff to hoist the timber until the tackle on its end hung just over the wall, and fastened it securely in that position. Norman had by that time tied a single block of Jeff's to the butt of the pole and reeved the fall rope thru it. (Fig. 8.)

While Norman took a hitch around the oak beam, fastening it to the lower block,



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The Value of Fresh Running Water on the Farm

THE value of fresh running water on the farm simply cannot be over-estimated.

Agricultural experiment stations as well as thousands of dairymen have proven that an abundant supply of *live, even-temperated water, fresh from the well*, will increase the milk yield of the dairy herd from 2 to 10 pounds per cow per day.

Given plenty of *fresh, even-temperated* water, they drink oftener and more freely. Beeves, hogs and sheep finish quicker; feed is assimilated better, goes farther and cuts down your feed bill.

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Write for catalog A-509 today—Now.

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The air operated system that delivers an abundant supply of water direct to the fixtures in the house and barns, at an even temperature, summer and winter, *fresh from the well*.

The system that brings all the conveniences and dependability of city water to farm and suburban home.

National electric motor driven systems are full automatic in control, and require no further attention than the occasional replenishing of the oil supply in the motor and compressor.



NATIONAL FRESH WATER SYSTEMS

Taking the Backache Out of Lifting

Jeff tied the end of the fall rope to his doubletree. Norman told him to pull. The team just walked across the barnyard as tho they had no load at all, and when the beam was high enough Norman and I swung it in over the wall and told Jeff to back up. The beam settled down into place.

We all laughed among ourselves at the way it was done. Seemed like we were just making believe we had a big job. Jeff couldn't help smiling. His mouth would twitch and wrinkle up just when he'd want to be serious, and he gave it up. He wanted to pay Norman

round bar with a loop on each end. There should be a plate 'd' under the end of the rail. The pivot rod 'e' may be either a round bar or pipe. And there should be an eye-bolt or forged ring at 'f.'

"The detail shows how to mount the trolley wheels. Separators made of $\frac{3}{4}$ -inch pipe keep the side plates apart, and $\frac{3}{4}$ -inch bolts go thru the separators to bolt everything together. A $\frac{3}{4}$ -inch bolt slips thru a $\frac{3}{4}$ -inch pipe nicely. An oblong ring is swung on the bottom bolt."

"I suppose this is very elementary stuff in engineering, Norman," I suggested.

"Well, we use a lot of tackle. Couldn't get along without it. Some of our rigs are pretty handy. Take that 'gin-pole' rig that we hoisted the timber with. That can be rigged quicker than anything else. But 'shear-legs' are steadier. They're just two poles lashed together at the top and spread apart at the bottom like a letter 'A' without the middle cross-bar. They're sloped out over the thing to be lifted just like with the gin-pole, with a guy-line. For a still better rig we use a tripod, which is just three timbers instead of two, spread out wide at the bottom.

"You ought to make yourself a couple rope slings. Take one-inch rope and make loops about 4 feet in diameter, with the ends spliced or tied. They are good to loop around things to lift them. That $\frac{3}{4}$ -inch rope is good for about 1,200 pounds on a single line." He handed me his sketches as I reached for them. "You fellows have a lot of patience to listen to all this preaching!"

"Seemed like a pretty good sermon to me," Jeff observed. "And believe me, there won't be any more backache in my lifting!"

✦

P L A N N I N G
next year's rotation is a good occupation for cold winter days when

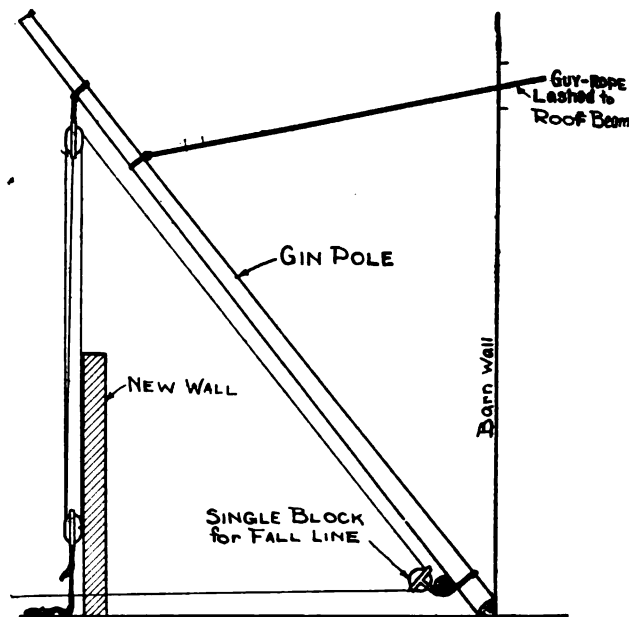


FIG. 8. GIN POLE RIG.

outdoor work is impossible; better yet, make it for the next four or five years.

✦

I T'S as hard to find anything new under the sun in agriculture as in all else. Artificial incubation of poultry was known centuries ago to the Egyptians and the Chinese.

✦

S E V E R A L weeks of liberal feeding with good roughage and from six to ten pounds of grain a day while cows are dry is good insurance for efficient production in the next lactation period.

✦

T O lengthen life in brooms, hang them up or rest them on their handles.

✦

L I F E preservers in winter time come shaped like a pair of rubbers.

✦

D U S T is the best little aeroplane microbes ever rode on.

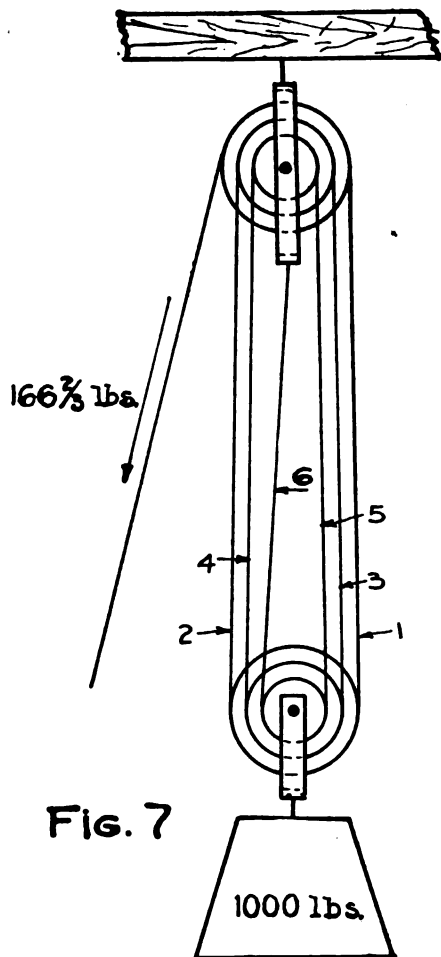


FIG. 7

for the tackle right away, but Norman wasn't talked out yet.

"It's always been amazing to me that you use your backs so much when you don't need to. For instance, you both have tool sheds—more like repair shops these days, with all your new machinery. You have to lift out motors, and change bodies on trucks and wagons" He was sketching as he talked. "Here is a trolley that would pay its way in any wagon shed or repair shop.

"It will swing in at least a half circle, and the load can be moved along the rail. (See Fig. 9.) That rail ought to be of steel. The two angle plates 'a' and 'b' are of steel also. The long brace 'c' is a

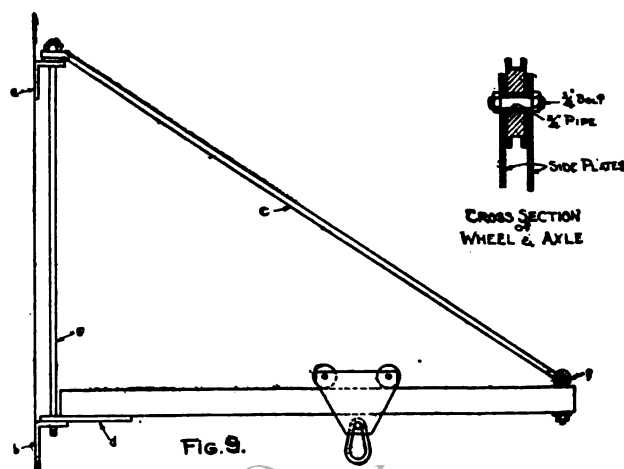


FIG. 9.

Doubled His Income After Learning Electricity



HERBERT M. DICKENSON

Now a Farm Superintendent

Read This Letter

NORTH WALES FARM
WARRENTON, VA.

March 18, 1922
Dear Mr. Cooke: Before finishing your Course on Electricity, as I am about to do, I want to thank you for the benefit you and your School have been to me.

When I started your Course I was just an ordinary auto mechanic, earning about \$30 a week. At that time I knew practically nothing about electricity.

After finishing half of your lessons I was getting \$50 a week.

Today through my knowledge of Electricity, gained through studying your wonderful Lessons, I am Superintendent of Mechanical and Electrical Equipment for the above farm at a yearly cash salary of \$2,500 a year. In addition they furnish me with a nice stone house, all fuel, electric lights, milk and vegetables, amounting easily to another \$1,000 a year, making my yearly income well over \$3,500.

I have under my supervision 14 electric motors, 2 tractors, 6 autos and 3 trucks.

A year ago I could not possibly have held down such a position, and am only able to do so today because of the wonderful training I have received from you. I consider my earning power two or three times that amount, and can, unhesitatingly recommend your course to any man. Thanking you a thousand times for what you have done for me, I am

Most truly yours,
HERBERT M. DICKENSON

Jumping from \$30 a week to \$3,500 a year and still going up. That's the record of Herbert Dickenson. He's got a job, too, that should be the envy of every young man on a farm in this country.—*Read his letter*, then decide what you are going to do to insure *your* success.

You Can Be An Electrical Expert Earning \$12 to \$30 a Day

I can quickly fit you to hold down one of the finest jobs in the electrical field, paying from \$70 to \$200 a week. Trained Electrical Experts are in great demand at the highest salaries. The opportunities for advancement and a big success are the greatest ever known. Even the ordinary electricians—the screwdriver kind—are making big money. But the experts—the bosses—the kind I turn out—are the ones who get the big pay. Get ready for one of these big jobs by enrolling for my easily-learned, spare-time Course.

Age or Lack of Experience Makes No Difference—I Guarantee Satisfaction

You don't have to be a College man—not even a high school graduate. My course is simplified and the most thorough and successful electrical Course in existence. It will make a big money-maker out of you regardless of your age or education. I guarantee under bond to return every penny you pay me if you are not satisfied after you complete it.

Free Electrical Outfit and Use of Laboratory

as well as consulting service and subscription to Engineering Magazine. The big Outfit that I give you includes an electric motor and numerous tools and instruments not usually found in a beginner's set—the whole thing is free to my students.

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You don't have to lose a single hour's time from the work you are doing now to take my Course. Spare time only is needed. You earn while you learn. I give you real training in your own home.

Mail Coupon Now

What you do now may be the most important step in your life. Don't miss this opportunity to find out what electricity can do for you. Look what Herb. Dickenson did. You can do it, too. Send the coupon now for my Big Free Book and a sample lesson.

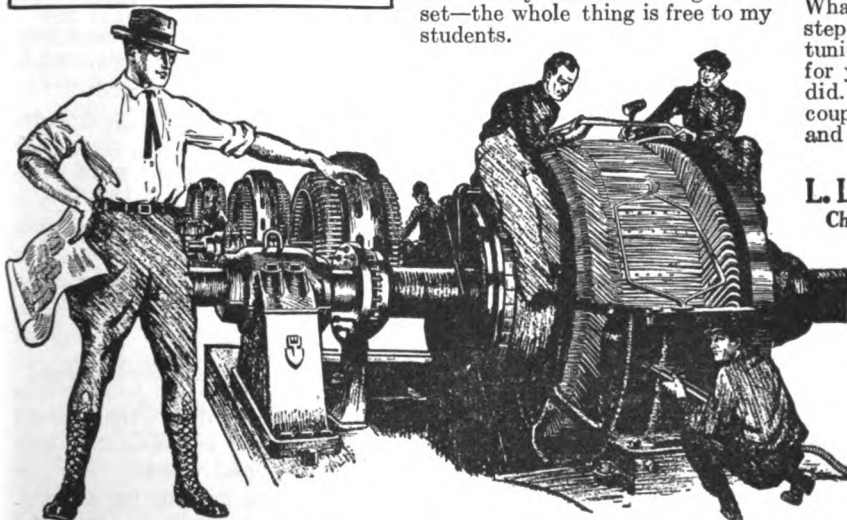
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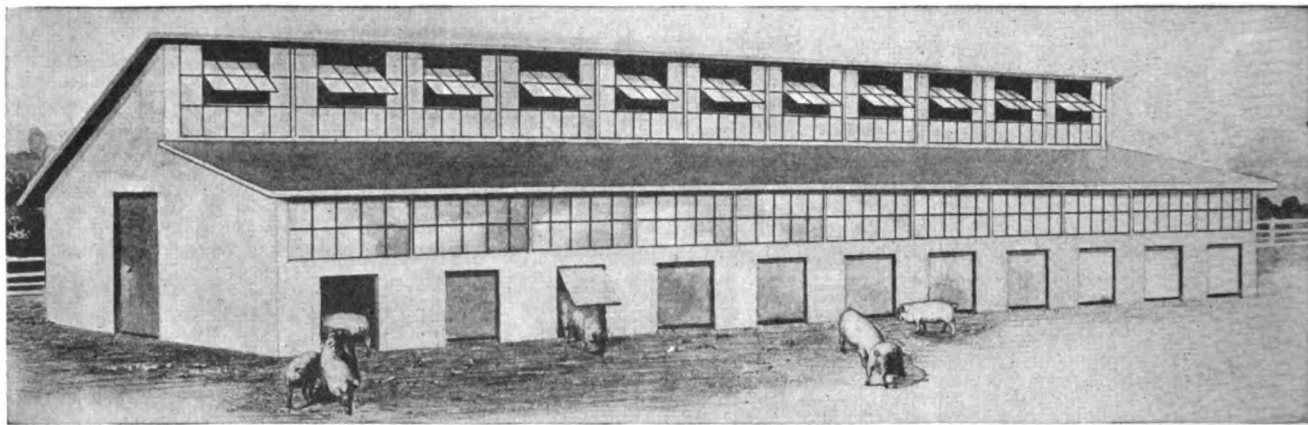
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Saw-Tooth Roof Hog House of Concrete with Windows in Steel Sash Makes a Good Farrowing House.

Steel Sash for Hog Houses

Modern "Daylight Factory" Construction Adapted for Use in Modern Farm Buildings

By N. A. HARRIS

EVERY farmer who has been successful in raising hogs knows that warmth, dryness, ventilation and sanitation are essential to their healthy growth. An abundance of direct sunlight is necessary to keep the interior of the pens warm and dry. Efficient ventilation is necessary to carry off the dead moist air.

The saw-tooth roof is one of the best types of roof for the modern hog house. It does away with half of the useless overhead air space, which so often makes a barn cold. It permits the use of a perpendicular row of windows up under the roof, that extends from one end of the barn to the other. These perpendicular windows admit direct sunlight into the interior, and this sunlight keeps the barn warm.

A row of windows just above the doors is recommended. The sunshine will help eliminate the dampness that hogs are bound to track in on a damp or rainy day.

Lay out the barn in such a position that the early March sunshine will enter

the windows. This is a critical period, and the healthy growth of the pigs depends to a great extent upon the warmth and dryness of the farrowing pens.

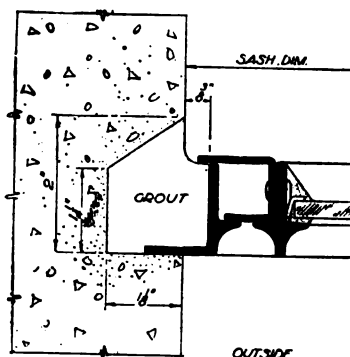


Fig. 1. Steel Sash Grouted Into Concrete.

Inasmuch as direct sunlight is of such great importance, it is to the advantage of the farmer to use a type of window that will admit the most light. Steel windows are made of narrow rolled steel bars. These narrow frames permit the use of larger glass lights. That

is why this type of window admits 30 per cent more sunlight than ordinary windows filling the same opening.

Efficient ventilation, another necessity, is assured by installing windows with ventilators in the upper row, directly under the roof. These large, easily opened ventilators quickly draw off the

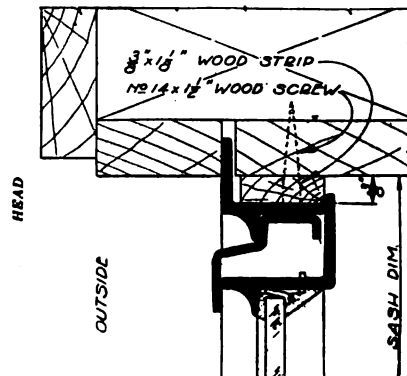


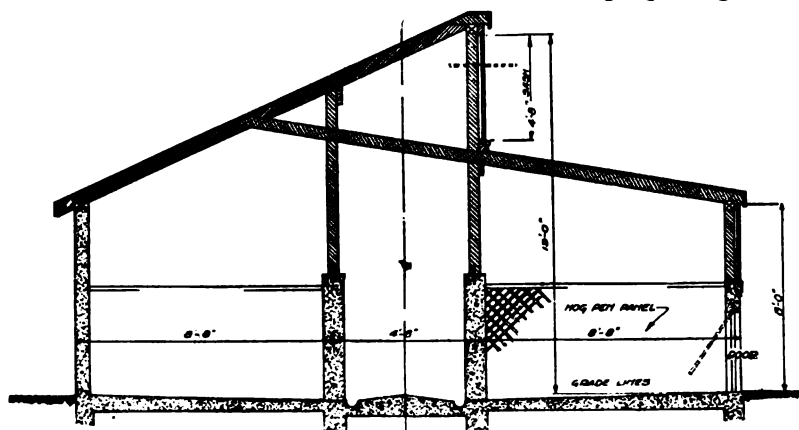
Fig. 2. Head, Jamb and Sill Details in Wood.

impure air in the hog house and help keep it dry and sanitary. They are made of steel and cannot warp nor stick.

And yet, in spite of the advantages these steel windows possess, their cost is comparable with that of wood windows.

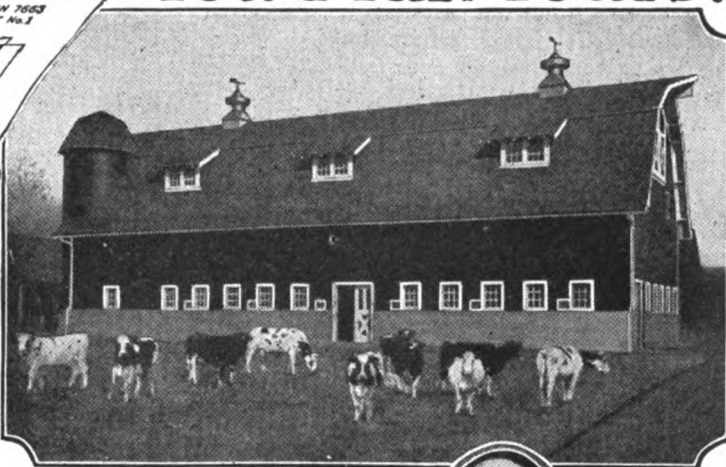
Two types of installation are present in this poured concrete hog house. The jambs of both rows of windows and the sill of the lower are concrete, while the head and sill of the upper, as well as the head of the lower, is in wood.

When steel windows are to go into a concrete building, the walls should always be erected first and the sash installed afterwards, whether one or more units are to go into the opening. A slot must always be provided in the jambs to form a rebate into which the



Cross-Section of Concrete Hog House with Steel Sash.

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WHETHER you intend to build a new barn or remodel an old one—it pays to make careful plans.

There are ways to make every foot of lumber count, methods of building that save a lot of carpenter work. Floor space and mow room can be economized or wasted. Some types of construction are more economical than others, more healthful for the herd, conducive to greater production. Hundreds of hours of barn work can be saved every year—or not saved—depending on the plans.

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leg of the frames rest as shown in figure 1.

Do not unwire the ventilators until the windows have been set as the units are easier to handle when the ventilators are wired shut.

Begin with the lower row of windows. Always install the units at each side of the opening first. After they are blocked up, install the intermediate units and bolt them loosely to the mullions so as to

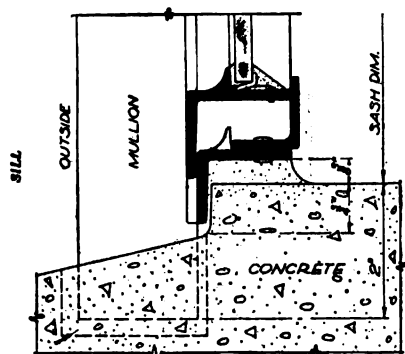


Fig. 3. Concrete Sill Details.

allow for any necessary adjustment. Be sure that the leg of the frame bar sits into the rebate at the jamb and head as in figure 2. Then true up the whole bay, bolt the units securely to the mullions and drive wood screws thru the frame into the wood member at the head. Then grout around the jambs and build up the sill under the lower frame and cement securely around the foot of the mullions. In figure 3 you will notice that the mullion is imbedded about an inch and a half in the sill. In this particular instance, it will not be necessary

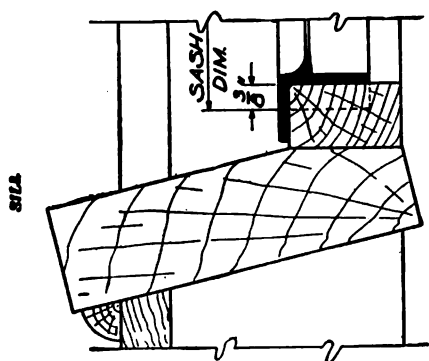


Fig. 4. Wood Sill Details.

to finish off the sill as carefully as shown in the drawing.

In the upper row of windows, the units are fastened to the mullions and are set in the concrete jambs in the same manner as in the lower. Nail cleats $\frac{1}{2}$ inch thick around the inside face of the header to form a rebate against which the outside bars of the sash will rest.

Insert the sash from the outside, true it up, and hold it in place. One or two

screws thru the sash into the head and sill are desirable, after which nail wood cleats to top header outside the sash, to hold the window firmly in place. Omit the cleat at the bottom of the sash as it is not really needed and the sill will look better and shed water better without it. The head and sill wood installations are shown in figures 2 and 4.



Ford Fires Blasts

LAND clearing activity thruout the country is daily bringing to light many new wrinkles concerning the handling of dynamite for stump blasting. One of the best "stunts" comes from Earl Roberts, county agricultural agent of Iron County, Michigan, who says:

"George Saarensen of Amasa has started something new by using his Ford truck to fire blasting charges electrically. Here is how he does it: He grounds one leading wire to the frame of his machine. The other wire is attached to the light wire which has been disconnected from the headlight. When all his dynamite charges have been placed in proper position and connected in circuit with the leading wire, he starts his engine, speeds it up, then turns on the light switch on the dash. Off go the charges! Mr. Saarensen tells me that he has shot as many as twenty-five electrically capped charges at one time in this way. Other farmers in his locality are now using the same plan instead of the old cap-and-fuse method; so far my investigations have shown it to be meeting with their entire satisfaction."

"The idea sounds quite feasible, tho I have not yet tried it out personally, but certainly intend to do so," declares A. J. McAdams, explosive expert in charge of all dynamite work done by the Extension Department of Michigan Agricultural College. "We have often

used a storage battery for the same purpose. Farmers have done the same thing. But a Ford truck is not equipped with a battery; therefore the other method is a handy alternative if properly used.

"In our own work we use the little 10-shot or 30-shot blasting machines which are convenient to carry, last for ever and are absolutely 'fool proof.'"



When the Blast Goes Off.

Still, in the final analysis, the one big idea is to get rid of the stumps. If the current obtained from a Ford magneto will fire off charges electrically, put it to good use. Nothing like making the most of things that we have at hand, for that is the one sure way of most rapidly converting non-productive stump land into productive, profit-returning, dollar-making acres. The cleared acre is the big thing."—JOE ALEXANDER.



E. F. SMITH AND R. E. B. McKENNY, of the U. S. Department of Agriculture, are investigating a new mildew disease of Florida tobacco which is entirely different from any other tobacco disease ever introduced into the United States.



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Fordson fitted with **Rigid Rail Tracks**

easily pulling a three-bottom plow thru heavy sod, in a recent public demonstration.

Finding the Acid in the Soil

Accurate Method of Finding When Land Needs Lime is Developed by University of Wisconsin Chemist

By G. H. DACY

ONE of the most valuable agricultural accomplishments of recent years has been the perfection of a new soil acidity test by Emil Truog of the Wisconsin Experiment Station. It is essential that farmers as far as possible know whether or not their soils are acid, because this condition is prohibitive to the growth of some agricultural crops, particularly alfalfa and clovers.

The Truog acidity test provides for the accurate determination of the acid condition of the soil and denotes definitely how much lime should be applied to correct this objectionable condition of soil sourness. The test is made in this wise: A sample of soil from the field to be tested is thoroly mixed and pulverized. A special soil measure is heaped full of the finely ground soil and struck off level with a spatula. The soil is then transferred to a laboratory flask. The exact amount of a mixture of barium chloride and zinc sulphide is then added to the flask and subsequently 100 cubic centimeters of distilled water or rainwater are added. The flask is shaken a little and placed over a heater where the flame is so regulated that the solution will boil in from 5 to 7 minutes. After the solution has boiled for exactly one minute—a watch is used to time the interval—a strip of lead acetate paper is placed directly over the mouth of the flask, the paper having previously been moistened with one drop of water. The paper is held in place for exactly two minutes—again the watch is used—and the boiling continued and then the flame is extinguished and the paper removed from the flask. If the soil is acid, the under side of the paper will be darkened; the greater the acidity the

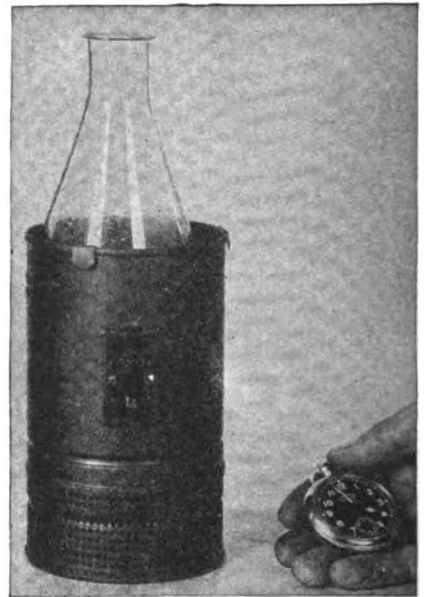
darker the paper will appear. The test paper should then be dried and compared with a standard acidity and lime chart to determine accurately the degree of acidity and the amount of lime which is needed per acre.

The economic importance of this test to farmers thruout the United States is immeasurable. Suffice it to say that practically all the 3,000 county agents who, at this writing, are assisting farmers in solving their intricate and complex problems, are utilizing this testing method as their prize sleuth in investi-



Soil in the Flask Is Placed Over a Heater.

gating the suitability of the soil for certain cropping purposes and in deciding how much lime may be economically applied. The scientific features of the test are simply that when zinc sulphide is boiled with an acid, hydrogen sulphide gas is produced. A sample of acid soil used in the test will cause the evolution of this gas; the more acid in the soil, the more rapid the production of this gas. When this gas comes in contact with lead acetate paper, a black compound is formed which darkens the paper in proportion to the amount of gas. Barium chloride is used to make the test more sensitive. By using definite amounts of soil, chemicals and water, and by boiling for a definite time, it is possible to determine the degree of acidity very accurately by comparing the test paper with the standardized acidity and lime chart.



Timing the Test Which Takes 5 to 7 Minutes.

The fact that the test is relatively simple and can be made by a person who has no knowledge of chemistry makes it the more valuable. A special equipment has been devised and now is on the market so that farmers may purchase it which features the use of a special, brass alcohol heater consisting of an alcohol lamp with a three-ply wick and a circular windguard which also acts as a support to hold the boiling flask at the proper distance from the flame. The flask rests on the triangular brass support which hooks over the top of the heater. The lamp is provided with a perforated disc radiator which fits around its neck and protects it and the alcohol from undue heating. It also aids in protecting the flame from air currents. A 300 cubic centimeter, Pyrex glass, Erlenmeyer flask with a 100 cubic centimeter capacity mark is used. The inside diameter of the neck of this flask must not exceed one inch. The soil measuring scoop holds exactly 9 cubic centimeters while the brass spoon for measuring the chemicals has a capacity of exactly .8 cubic centimeters. The chemicals consist of a bottle of an intimately ground mixture of ten parts of neutral barium chloride to one part of neutral zinc sulphide and a vial containing strips (2½ inches by ½ inch) of lead acetate, test paper. The acidity and lime chart completes the equipment, all of which is packed in a handy, wooden, carrying case.



Gathering the Soil Samples and Testing in the Field.



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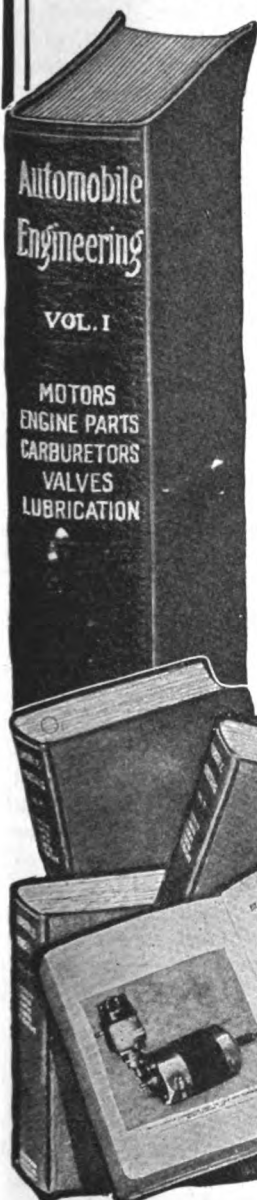
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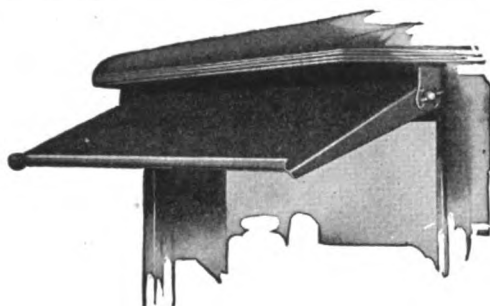
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Sales on the famous Turner 2 in 1 Timer have never been so great as at the present time. Time and again our production has been increased (several times doubled) to meet the ever growing demand for this great product. Recent tests have shown the Turner 2 in 1 Timer going strong and showing very little wear at the end of fifty thousand miles. Has stood repeated and rigid tests for over five years and has proven a genuine quality article and a boon to every Ford owner. Increases power, insures an instant start in all weather, lessens fouling of two front plugs, saves gasoline and stops motor kicking. Is oil, grease and waterproof. Requires no oiling. Easily installed.

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Light in weight, rigid, positive adjustment. A genuine quality product at a popular price. Shields handsomely finished in one or two colors baked enamel.

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For complete information on the Turner Line, write direct to the manufacturers. Watch for the announcement of the TURNER JUNIOR Timer for Ford Motors.

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To Handle Wagon Box

THE illustration shows the method we use to make easy the job of loading header boxes on the wagon running gear. The entire outfit consists of a large pair of shears and a block and tackle with a hook attached. The shears are con-



Tripod for Handling Wagon Box.

structed of 2 by 4's or similar material about 10 or 12 feet long, fastened together at one end with a jay bolt, which has a ring in it. One end of the block and tackle is hitched to the ring and the other into the larger hook which goes under the cross piece of the wagon box.

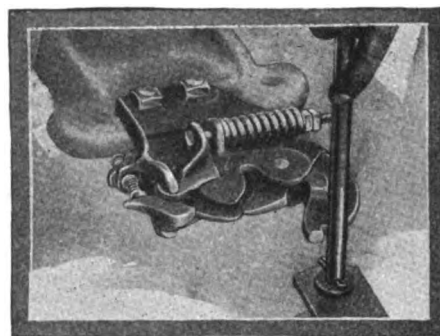
To load the box the running gear should be separated by removing the king bolt and placing the rear wheels under the box first. After they are in place they should be blocked to prevent them from rolling while the front end is being lifted. The front wheels then are moved into position and the king bolt replaced. By this means two men can easily load a heavy wagon or header box.—R. H. BALLARD, Cache Junction, Utah.



Canadian Champion Hen

CANADA'S blue ribbon hen, a Barred Rock, has just finished up at the second New Brunswick egg-laying contest at Moncton with a credit of 247 eggs. Two hundred birds were in the contest, covering a period of 52 weeks and making an average of 139.43 eggs, as compared with an average of 152.13 eggs for the previous year. The best pen in the contest, says Consul Rasmussen, Moncton, in a report to the Department of Commerce, was of Barred Rocks, with a credit of 2,143 eggs for the 52 weeks, and was the only pen which showed an average of over 200 eggs per hen. Six of the birds in this pen laid over 200 eggs, and the lowest one had a record of 171. The two hundred hens consumed 11,672 pounds of mixed grains, 7,790 pounds of mash, 8,930 pounds of skimmed milk, 585 pounds of grit, 682 pounds of shell, a small quantity of charcoal, and a liberal amount of green feed during the year.

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No. 90. Safety Hitch

This hitch couples the tractor and implement together automatically, and it also releases the implement automatically when the implement strikes any solid resistance, such as solid rocks or stumps, and therefore prevents all breakage to either the tractor or implement. It is adjustable, so that it can be set to release at any tension desired by the operator, but can also be locked if no automatic release is wanted. When properly adjusted, the hitch will draw any load the tractor can pull on low gear, but will release the load should the operator let in the clutch suddenly on a fast running motor, thereby preventing serious accidents that often occur when this is done, which is a safety feature that no one should overlook. Every owner of a tractor owes this SAFETY feature either to himself or whoever he expects to operate the tractor for him.

Can be attached to nearly all makes of tractors with a rating of from 8 to 30 H. P., at the draw-bar, and will handle satisfactorily any load drawn by tractors of this size.

No. 40. Fordson Shifting Hitch

This hitch is built exclusively for the FORDSON tractor and does just what every Fordson operator has often wished could be done (that is), to adjust the implement on the draw-bar without stopping the tractor.

Hitch allows the operator to shift the implement a distance of eleven inches.

The greatest field of usefulness for this hitch is found in plowing rolling or hilly land, as the operator can at all times keep the plow cutting a uniform furrow, which is something impossible to do without some method of shifting. This hitch has also been found very essential when working orchards, drawing corn-binders, potato diggers and in fact several implements where an off-set is desired.

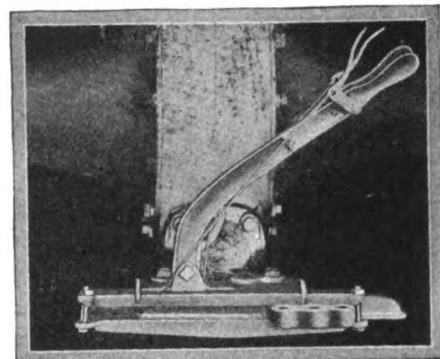
The hitch is operated by two little dogs at the end of a lever; when one of these is raised the other moves the slide one way; when the other is raised the slide travels the opposite way by working the lever a short distance up and down. The two clips at the upper end of the lever allow the operator to raise either dog desired. Any load is shifted without any effort on the part of the operator.

No. 80. Simplicity Fordson Lock

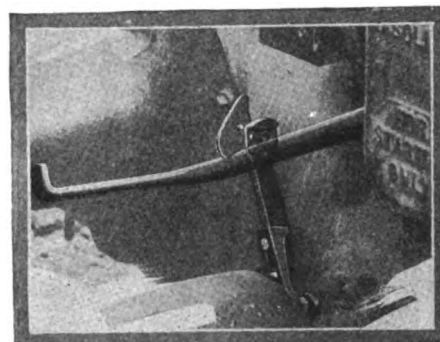
This is a little device that should be on every Fordson tractor. Its importance is at once seen by any Fordson owner. With it the clutch can be disengaged without keeping a man on the tractor to hold the clutch arm down. It is also a great advantage when starting the tractor in cold weather, as it cranks much easier with the clutch out.

No. P-10. Double-Tree Hitch

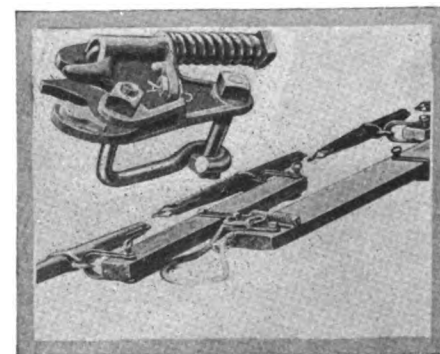
This is a small device made to attach to the end of an evener, and is of wonderful value to all farmers having either rocks or stumps in farm land. This device is to be used on 2, 3, 4, 5 and 6 horse eveners, and will prevent all breakage of implement or evener when implement strikes a solid rock or stump. Instead of breaking the evener, a doubletree is released which gives the horses time to stop before anything breaks.



No. 40 Shifting Hitch



No. 80 Fordson Clutch Lock



No. P-10 Doubletree Hitch

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WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

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DARWIN declared that the human race was merely an evolution of the monkey tribe. Some people agree with him. Others do not.

But there is no denying that even within the the memory of most of us, there has been considerable of an evolution in the human mode of living. And today, this evolution is buzzing along faster than ever.

There has never been a time when conditions changed so rapidly—when life bettered itself so consistently. New comforts and conveniences are coming in all the time. And the rapidity with which they are invented and put before us vitally affects us all.

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Advertisements are interesting, instructive and highly profitable to you.

Keep in touch with modern evolution by reading the advertisements.

—FARM MECHANICS

Steers Pay More if Confined to Barn

KEEPING fattening steers in a barn thruout their feeding period in tests at the Kentucky Agricultural Experiment Station paid an average net profit of \$6.28 a head more than allowing steers access to a barn and the run of a pasture. The tests were carried on by the experiment station for three years to compare the two methods of fattening cattle for the market.

The tests also brought out four other points of special significance to Kentucky farmers and beef cattle feeders. These are outlined as follows:

1. The three experiments showed that the average daily gain of each steer confined in the barn was one-sixth of a pound greater than that made by each steer having access to the barn and range.
2. The average cost for each 100 pounds of gain was \$2.26 less for the steers that were confined in the barn than it was for those allowed range.
3. The average value of the finished steers was 20 cents a hundredweight larger for those that were confined than it was for those allowed range.
4. Sixty-four per cent more manure was taken from that part of the barn where the steers were confined than was taken from that part of the barn to which the steers had access as well as the run of a twenty-acre pasture.

Two lots of ten steers each, as nearly alike as possible, were fed each year of the three-year test. The two lots of steers were fed and handled the same except that one lot was confined to one-half the barn and covered yard while the other lot was allowed the run of the other half of the barn and a 20-acre bluegrass pasture.



Cow-Testing Associations Tell Truth To Dairymen

THE study of production records of large numbers of cows, made possible by the work of the many cow-testing associations that have been organized in almost every part of the country, has brought out a grist of information on the possibilities of dairy-cow improvement and on the efficiency of various methods and practices. The records of many thousands of cows have been gone over in the last few years by the United States Department of Agriculture.

From the lowest-producing group of cows to the highest-producing group every jump of 50 pounds in annual butterfat production was accompanied by an increase of about \$16 in income over cost of feed. The more fat produced, the bigger this income. A few heavy producers are better than a larger number of light yielders.

The average production of the 21,234 cows whose 12-month records have been studied was 6,077 pounds of milk and 248 pounds of butterfat, or about 50 per cent more than the average of all the dairy cows in this country.

Belgium Melotte

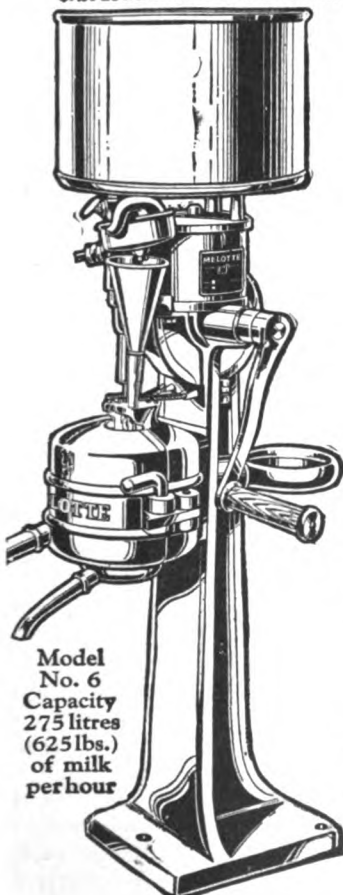
Imported Separator

Self-Balancing Bowl

The Belgium Melotte is the only single-bearing-bowl separator ever made. This patent Bowl hangs from one frictionless ball bearing and spins like a top. It is *self-balancing*. It skims as perfectly after 15 years use as when new. Positively cannot ever get out of balance—cannot vibrate and thus cause cross currents which waste cream by remixing with milk. Send coupon below today. Get the Free Book that tells about this great Melotte.

\$750
After Trial

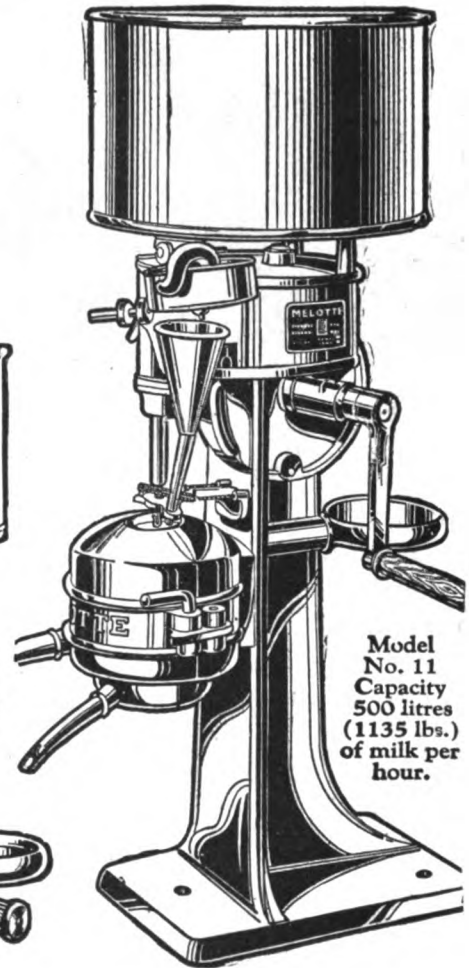
We will send an Imported Belgium Melotte Cream Separator direct to your farm on a 30 day's absolutely Free Trial. Use it just as if it were your own machine. Put it to every possible test. Compare it with any or all others. The Melotte is easy to keep clean and sanitary because it has only one-half the tinware of other separators. Turns so easily that bowl spins 25 minutes after you stop cranking unless brake is applied. No other separator has or needs a brake. After you have tried it 30 days and you know it is the separator you want to buy, pay \$7.50 down and balance in small monthly payments.



Model
No. 6
Capacity
275 litres
(625 lbs.)
of milk
per hour



Model
No. 7
Capacity
325 litres
(740 lbs.)
of milk per
hour.



Model
No. 11
Capacity
500 litres
(1135 lbs.)
of milk per
hour.

**Free
Trial**

Your choice of any of these three models. **NO MONEY DOWN—FREE TRIAL—SMALL MONTHLY PAYMENTS—DUTY FREE.** This wonderful Belgium Melotte Separator has been picked by a jury of thousands of farmers—picked by dairy experts throughout the world to be the "king" of all separators ever manufactured. It has broken all records for Efficiency of Skimming, Ease of Turning, Convenience of Operation and Durability. Send coupon below for Big Free Book.

Write

Mail coupon for catalog giving full description of this wonderful cream separator. Don't buy any separator until you have found out all you can about the Melotte and details of our 15-year guarantee. Don't wait—be sure to mail coupon TODAY!

MELOTTE SEPARATOR, H. B. BABSON, U. S. Manager
19th Street and Marshall Boulevard, Dept. 2762 Chicago, Illinois
2445 Prince Street, Berkeley, Calif.

The Melotte Separator, H. B. Babson, U. S. Mgr.
2843 West 19th Street, Dept. 2762 Chicago, Ill.
2445 Prince St., Berkeley, Calif.

Without cost to me or obligation in any way, please send me the Melotte catalog which tells the full story of this wonderful separator and M. Jules Melotte, its inventor and hundreds of letters from American farmers.

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IN THE FARM SHOP



Kinds of Metal Worked And Their Treatment

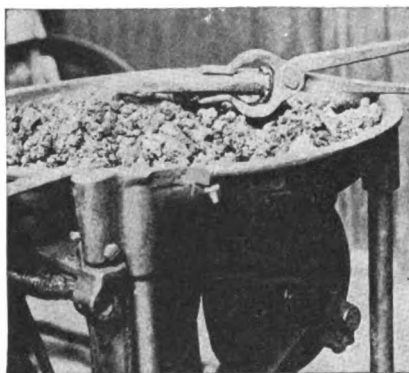
By LOWELL R. BUTCHER

IT WILL be well, before going into the forming of metal by forging, to consider some of the metals which are commonly worked by forging. A workman who does not know the kind of metal he is using or its characteristics, cannot get the best results.

Three metals are commonly used in the shop. Wrought iron and machine steel will be used most often, but tool steel will be needed from time to time for making chisels, punches and other tools which must be tough, durable and yet retain a keen cutting edge or refuse to batter under continued use.

Roughly, the metals mentioned may be considered as mixtures or compounds of iron and carbon. Many other elements may be found in these metals but it is the different percentages of iron and carbon which gives to them their characteristics and fits them to the uses for which they are best suited. The percentages of carbon in each of these metals are very small. Wrought iron

is usually 2/1000 to 5/1000 carbon, machine steel has from 2/1000 to 6/1000 of the same element while tool steel has a carbon part that is about three times greater than either of these. From



Drawing the Temper of a Tool by Holding it Over the Forge Fire.

7/1000 to 15/1000 part of tool steel is usually carbon.

It will be noticed that wrought iron and machine steel contain about the same percentages of carbon. It does not follow, however, that these metals are the same or that they are suited for the same purposes. Wrought iron, because of the way it is made, has small fibers that run lengthwise thru the stock. The broken end of a wrought iron bar has a rather stringy appearance due to these fibers. This stringy appearance is due to slag or impurities which have not been refined from the metal. Consequently each of these fibers weaken the forging.

Machine steel, on the other hand, has a more grainy or crystal-like appearance when a bar of it is broken. In other words, machine steel is a much more pure product than wrought iron and somewhat stronger.

Wrought iron, on account of its fibrous make-up, is much more apt to split

during the forging if it is not handled very carefully. It may be worked at a higher heat than machine steel but will not stand shaping at too low a temperature. The fibers of the slag give it some advantages when it comes to welding as the slag acts as sort of a flux.

Machine steel is stronger than wrought iron. It may be welded without flux but a much stronger and better weld will probably be obtained if a flux is used. Its heat for welding is slightly higher than that for wrought iron.

Machine steel has some advantages over wrought iron, but most of the forgings made in the farm work shop will be sufficiently strong if wrought iron is used. To sum up: each of these metals are fairly easily welded and will not harden to any extent if cooled rapidly. Wrought iron welds somewhat easier and machine steel is the stronger.

Tool steel is especially valuable because it can be hardened after forging it to shape. Chisels, punches, tools or any forging that must be very strong or present a wearing surface is best made from tool steel. It is much more expensive than either of the other two metals mentioned which prohibits its use for ordinary work.

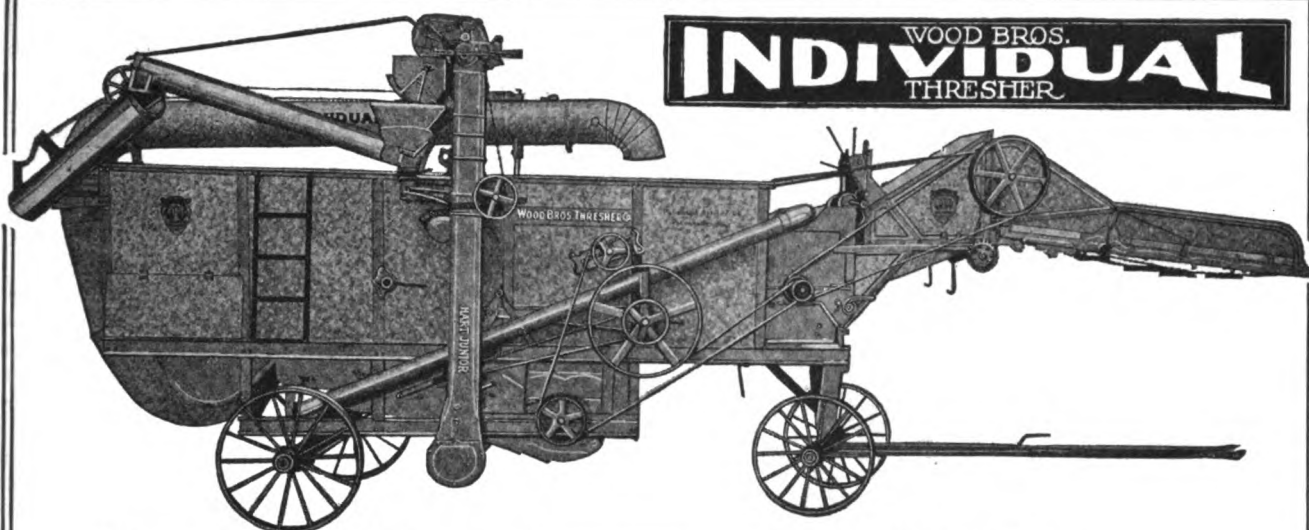
Tool steel differs according to the amount of carbon it contains. That which contains a comparatively large amount of carbon is known as a "high carbon" steel; a small carbon content is referred to as a "low carbon" steel. A steel containing about 1 per cent or 10/1000 part is usually used for small tools such as punches and chisels.

If a piece of tool steel be heated to a red heat and suddenly cooled by plunging it in cold water, it becomes very hard and brittle. Now suppose the reverse be done, that the steel be heated and cooled very slowly by packing it in dirt or lime. When the operation is finished the steel will be very soft. This reverse of hardening is known as annealing. Thus it will be seen that tool steel will be hardened according to the way it is cooled. In other words, the hardness of the tool depends partly upon the *speed* of cooling.

The proper hardening heat, or the heat from which the metal should be cooled, will depend upon the percentage of carbon in the steel. Generally speaking, a "high" carbon steel requires a much lower heat than the "low" carbon



Tool Steel Is Hardened by Cooling Suddenly.



WOOD BROS.
INDIVIDUAL
THRESHER

Three Leaders of the World

Wood Brothers Threshers are famous the world over. Wherever there is grain to thresh you'll find the Wood Brothers on the job.

Has more real improvements, more exclusive features, more day-in-and-day-out service built into it than any other thresher on the market.

Steel Individual
21 x 36
Steel Individual
26 x 46
Humming Bird
Special
30 x 50

A Size for Every Tractor

No matter what your threshing needs may be there is a Wood Brothers Thresher exactly fitted to the work.

From the Individual 21 x 36 (Fordson size), the 26 x 46 medium size, to our big 30 x 50 Humming Bird we offer a range of threshing efficiency unsurpassed.

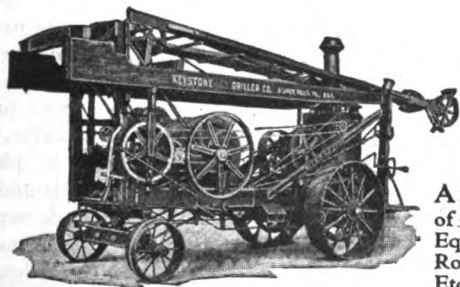
Fordson and International Dealers write today for our special proposition for 1923

WOOD BROTHERS THRESHER CO., Des Moines, Iowa



WELL DRILLS

Keystone Well Drills are dependable tools for Water, Oil and Gas Wells, Mineral Prospecting, Blast Hole Drilling. Portable and Traction Drills for all depths, 25 to 3000 ft.—Steam, Gas Motor or Electric Power.



A catalog and price list of Well Drilling Rigs and Equipment, Bits, Stems, Jars, Rope, Sockets, Fishing Tools, Etc., will be sent on request.

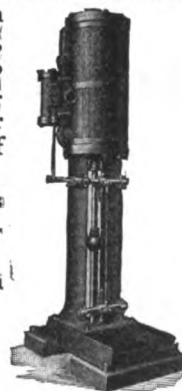


DEEP WELL PUMPS

Downie Deep Well Pumps are offered for Heavy, Continuous Service in Deep Artesian Wells. They are built in Double and Single Stroke Models and may be Steam Driven, Belted, Direct Geared to Motor, or equipped for any other standard form of drive. Smaller Pumps for lighter service.

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Downie Centrifugals, single and multi-stage, Catalog 801.



Keystone Driller Company, Beaver Falls, Pa.

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Here's the "runt" head—
the kind that spells LOSS



Here's the "fair size" head
which means "break even"



Here's the full, plump head
that puts money in the bank

Which Kind Grows on Your Farm?

MORE sound, plump grains per head—and more heads per acre! That's the aim of every farmer. A good harvest depends primarily upon good seeding—the proper deposit of every grain in the soil—at exactly the right depth—and exactly the right distance from its neighbor.

Superior Grain Drills

For Team or Any Tractor

give your grain "the right start in life." Even spacing, uniform depth and every seed covered properly—these vitally important requisites of successful seeding are absolutely assured with the Superior Grain Drill.

For over fifty years, Superior seeding has meant better seeding. The purchase of a Superior is the best investment any farmer can make.

The American Seeding-Machine Company

Springfield, Ohio, U. S. A.



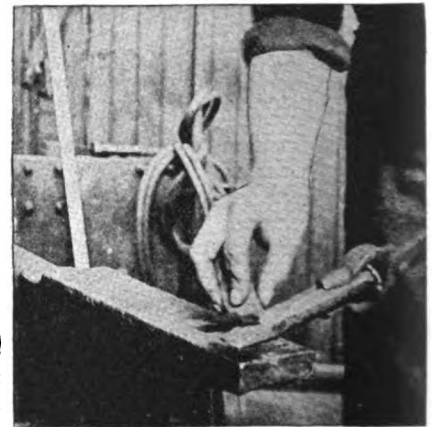
WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

metal. The best way to determine the proper heat is by test.

Take a small sample of the steel and forge it into a bar that is about $\frac{3}{8}$ inch square in cross section. Heat one end of the bar until it shows a dull red and cool quickly in cold water. Test with a file for hardness and break off the end of the bar. Possibly the broken end will look rather coarse and the metal may be filed quite easily.

Repeat the same test, using a slightly higher heat. This time the broken end will probably show a finer grain and the bar may file with difficulty. By gradually increasing the hardening heat and testing each time, a point will be found where the metal will not file and where the bar is very brittle. The broken end will show a very fine crystal-like grain. This will be the proper hardening heat for the particular grade of steel.

It is evident that a piece of steel



Polish the Steel with a Piece of Brick
to Remove the Oxide.

hardened to such a point would be useless if there were no way of overcoming the brittleness. This is done by annealing or slightly softening the steel by re-heating. Of course this re-heating must be very carefully gauged or all the hardness will be taken out and leave the steel too soft.

This annealing, or "tempering" as it is sometimes called, may be accomplished by polishing the hardened metal to remove the scale and holding the steel over the fire. As the metal is slowly heated, the polished surface turns to a pale yellow, from a yellow to a brown. From a brown to a light purple, a dark purple and a blue. Chisels and punches are tempered until the dark purple color appears. The higher in the scale of colors that the tool is "drawn," the harder it will be. Chisels and punches, because they must stand much hammering without breaking, are softened more than some other tools.

About the best way to test the temper of the steel is with a file. A chisel

should be just hard enough so that a fine file will scratch it. This test will mean nothing, however, if the tool was first hardened at too high a heat.

If the steel should accidentally be softened too much, it must be hardened again and re-tempered. If there is any doubt about the proper hardening heat it is better to err on the side of too low a heat. If too high a hardening heat is used the tool will probably break the first time it is used. Too low a heat is quickly detected as the tool will be soft. Remedy the trouble by hardening at a slightly higher temperature.

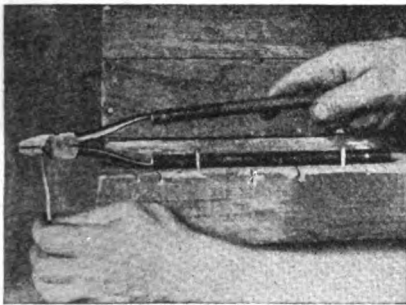
Tool steel welds with difficulty and for this reason a weld will seldom be attempted. Its greatest use, as mentioned, will be for tough and durable tools.

Many other phases of hardening tool steel might be mentioned, but if one understands the hardening and tempering of this kind of metal, he has the fundamentals of tool steel work.



Bench Wire Cutter

WHEN the need arises for cutting a number of wires, long or short, it is a good plan to mount the cutting pliers on the bench as shown in the accompanying illustration. We have used this method for some time and can rec-



Bench Wire Cutter Made of Pair of Pliers.

commend it to others who have work of this kind to do. Very little explanation is necessary to present this idea. Two pieces of iron pipe or tubing make excellent extension handles for the pliers. One of these is held stationary on the bench by two staples. It should be understood, however, that these extension handles are not intended to be used as a means of securing increased leverage to cut thicker wire than would be otherwise attempted. The purpose of mounting the pliers is to use them as a bench cutter with a chopping motion, thus relieving the arm from the strain of a continued grip and enabling the wire to be fed in and chopped into lengths much more quickly than if the pliers were held in the hand.—HARRY MOORE, Montreal, Canada.

How do you account for this?



Why is it that there are approximately as many De Laval separators in use today as all other makes of separators combined? For just one reason, which is based on the actual experience of several millions of users over a period of forty years, who have found it the *most satisfactory*, in that it skims cleaner, lasts longer and is easier to operate and clean than any other.

98%



Of the best creameries use De Laval Separators~

The creameryman knows the best cream separator. Practically all of them use De Laval. Why? Because they have found by testing the skim-milk, and by experience, that the De Laval is the most profitable. They know that a poor separator can soon waste all their profit and that a De Laval soon pays for itself. The De Laval you use is built on the same principle as the creameryman's.

86%



Of the exhibitors at the National Dairy Show use De Laval Separators

At the 1922 National Dairy Exposition an investigation among the exhibitors of purebred dairy cattle disclosed the fact that 86% of them use De Laval Separators. These exhibitors of purebred dairy cattle are the cream of the world's best dairymen—they know the best separator and use it. Butter made from De Laval cream also won first place in *every class*.

64%



Of the Separators in the leading butter state are De Laval~

More butter is made and more cream separators are used in Minnesota than in any other state. According to an investigation by a prominent farm paper, 64% of the cream separators in Minnesota are De Laval—almost two out of every three. A remarkable record—which simply drives home the fact that the more people know about separators, the more they appreciate De Laval.

51%



Of all cream Separators are De Laval~

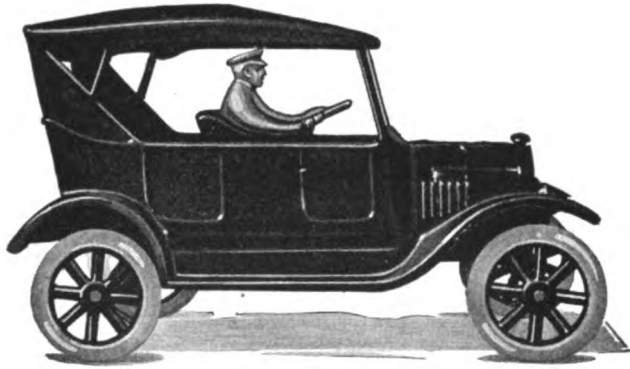
—according to an investigation by a group of prominent farm papers of wide circulation. There are, still, many inefficient and worn-out separators in use today which are wasting enough butter-fat to pay for new De Laval. Get the most out of your butter-fat with a new De Laval. See your De Laval Agent or write us.

The De Laval Separator Company

NEW YORK
165 Broadway

CHICAGO
29 E. Madison St.

SAN FRANCISCO
61 Beale St.



Weight, 1 $\frac{3}{4}$ lbs.; Length, 6 $\frac{1}{2}$ inches.

Train Him While He's Young

WHEN your youngster grows up, he'll have to run your tractor and your Ford, too. These life-like toys get him thinking in mechanical terms while he's young. Exact reproductions of the Fordson and the Ford. Train your youngster early in automotive mechanics.

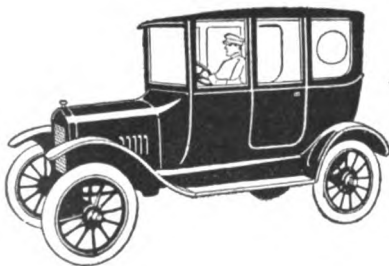
No Clockwork to Get Out of Order

These toys are built soundly of cast iron and beautifully painted. No cogs or wheels to get out of order and cause the toy to be thrown away. They last indefinitely. Women use them as mantle or piano ornaments.

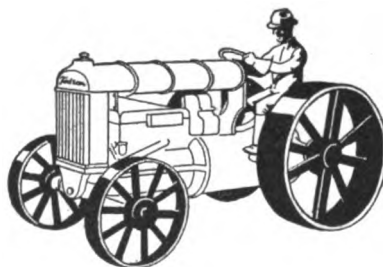
Fifty Cents for a Ford or Fordson!

(60c to 75c West of Rockies and in Canada)

Hardware, department stores, drug stores, and others sell them. **Be sure to ask your local Ford Distributor about these novelties.**



Toy Ford Sedan



Toy Fordson Tractor

Ask your dealer to show you the Arcade Toy Yellow Cab, Toy Cab Bank and Toy Coupe in assorted colors.

ARCADE MANUFACTURING COMPANY

FREEPORT, ILL.

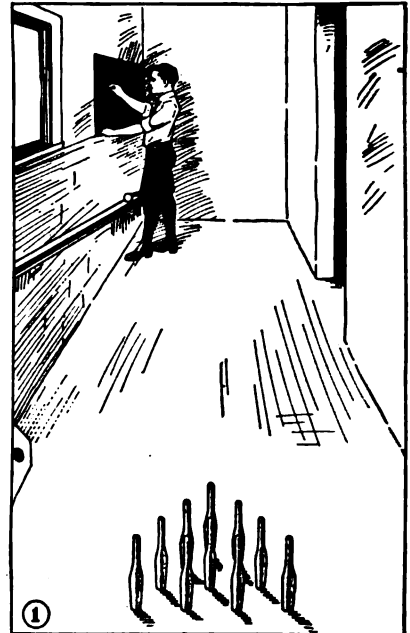
ESTABLISHED 50 YEARS

SOMETHING THE BOYS CAN MAKE

A Home Bowling Alley

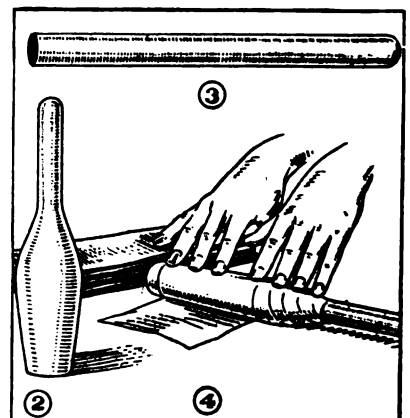
YOU can fit up an excellent bowling alley at home, in the basement, in the attic, or in a large room. A long flat surface is essential for the home alley, and a concrete floor answers the purpose well.

There is not much fitting up necessary, but a pin-setter like that shown in Fig. 5 speeds up the setting of pins,



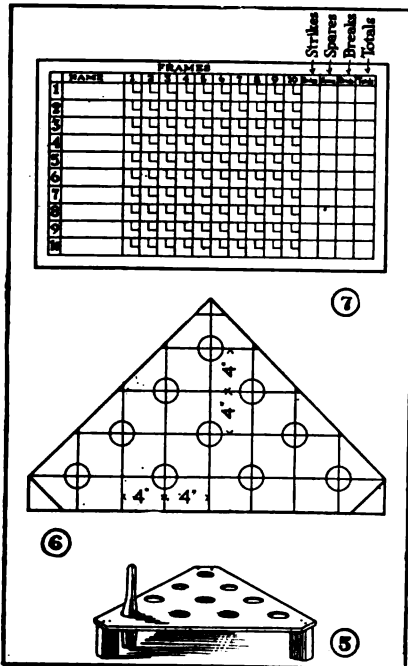
a ball-return (Fig. 1) returns the balls to a point convenient for the bowler to reach, and a scoreboard (Fig. 7) is handy. You can build all of these from the accompanying plans.

Any set of ten-pins can be used for the home bowling alley. If you haven't a set you can make one. Figure 2 shows a home-made pin. Its center is a piece of a broom handle. Its tapered base is built up of strips of newspaper. Cut the broom handle core 12 inches long. You will need five old brooms



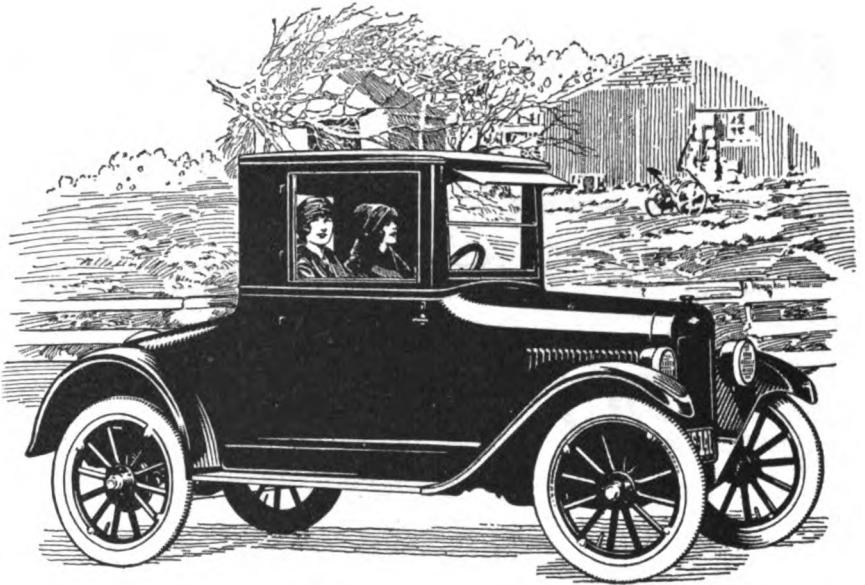
for the set of pins, because only two cores can be cut from a handle. Old brooms are plentiful in every neighborhood, so it ought to be easy to locate what you need. The tops of the cores must be rounded like broom handle ends (Fig. 3). The tops of the cores cut from the center of the broom handles can be whittled round, then smoothed up with sandpaper.

Wrapping a pin is easy. Cut sheets of newspaper into strips two columns wide, cutting along the printed column rules. Make a saucerful of flour paste and get a brush an inch or so wide for a paste-brush. To wrap a core, coat a newspaper strip with paste, place it upon a table and roll it up on the core in the manner shown in Fig. 4. Roll up



a second strip in the same way, then a third strip, then a fourth, and so on until a thickness of $2\frac{1}{4}$ inches has been obtained. The tapered sides of the pin are produced by wrapping the paper slantwise. By putting the strips on evenly and pulling them tight, the sides of the completed pin will be firm and hard when the paste has dried. To smooth off the edges of the lapped strips, rub the surface of the pin with fine emery paper. Finish the pin with paint, followed by a coat of shellac and another of varnish.

Croquet balls or large rubber balls can be used on the home bowling alley. Figure 5 shows the homemade pinsetter. Its top is a piece of wallboard. You will need a piece about 24 by 30 inches in size. Locate the pin hole centers by ruling four horizontal lines and seven vertical lines across the wallboard, as shown in Fig. 6, then using alternate intersections for hole centers.



The Car for the Woman on the Farm



The country woman needs her own car.

When the farm has only one car it is usually in use on the business of the farm, just when the wife or daughter needs to go to town or to a meeting or to make calls.

Chevrolet Utility Coupe

\$680

f. o. b. Flint, Michigan

This is an ideal car for the purpose, as it has full weather protection, a high-grade Fisher Body, upholstered in gray whipcord, plate glass windows, which can be instantly lowered or raised to any desired position, a mammoth rear compartment for luggage, bundles, a jar of butter, a crate of eggs, or even a trunk.

The inside of the car can always be kept clean, because all packages can be carried in this rear compartment.

The Utility Coupé is comfortable, easy to operate, and has ample power to handle bad roads.

See Chevrolet first.

Chevrolet Motor Company, Detroit, Michigan

Division of General Motors Corporation

Prices F. O. B. Flint, Mich.

There are now more than 10,000 Chevrolet Dealers and Service Stations throughout the World.

SUPERIOR Two Pass. Roadster	510
SUPERIOR Five Pass. Touring	525
SUPERIOR Two Pass. Utility Coupe	680
SUPERIOR Four Pass. Sedanette	850
SUPERIOR Five Pass. Sedan	860
SUPERIOR Light Delivery	510

Applications will be considered from high grade dealers in territory not adequately covered.

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

"Hired Help" That Never Quits

*Day in and Day Out—Month
after Month—a Water System
Will Work for you*

It's Not a "DAYTON"
Without This Trade Mark



Water Supply Systems

- are automatic
- dependable
- economical
- simple to install
- require little attention
- replace the cumbersome wind mill
- make possible the modern bath room, kitchen and laundry.

If you could hire a man who would work for two or three cents a day and would make a contract to stay with you for the next ten or fifteen or twenty years, would you hire him?

Certainly you would!

Perhaps you know about water supply systems in but an off-hand way. Perhaps you have heard conflicting statements. We have just prepared a little booklet, written frankly, honestly and clearly which can be read in fifteen minutes and which will clarify the matter. Will you write for it?

Ask for Booklet No. 500

The Dayton Pump & Manufacturing Co.
DAYTON, OHIO

Pacific Coast Branch

401-405 FOURTH ST.

SAN FRANCISCO

"Dayton" Pumps

Make the water do the running

Cut the holes with a jack-knife and smooth up the edges with sandpaper. The holes must be large enough so the pins will slip thru them easily. Trim off the edges of the wallboard so there will be a margin of 2 inches outside of the holes. Nail the corners to blocks 4 inches high.

Keep the pin-setter at one side of the alley while a player is bowling. When he is thru, clear away the balls and pins, put the pin-setter in position, drop the pins into its holes and then remove it.

Bowling scores can be kept upon paper ruled off with a pencil in regulation form (Fig. 7), or on a blackboard ruled off with white paint. This simplifies score keeping, which at best is not the easiest thing for a beginner to handle. Ask father to show you the system.

(Copyright, 1922, by A. Neely Hall.)



Machinery Requires Proper Size Pulley

THE use of the proper-sized pulleys has a lot to do with the efficient operation of belt-driven machinery. How to select the proper sizes is not as difficult as some persons think.

In every case, they add, one knows, or can find out, two facts about one of the pulleys—its diameter and its speed. One also knows at least one fact about the other pulley—either how fast it should run or how large it actually is.

An example shows how to figure the unknown quantity better than explanation.

Take an engine running at 600 revolutions per minute. The engine pulley is 12 inches in diameter. You desire to run a feed grinder at 900 revolutions a minute. What size pulley should you get? You know the engine pulley's speed is 600 revolutions and its diameter is 12 inches. You know but one thing about the grinder pulley, its speed, which is 900. How can you find the diameter?

Multiply together the two things that you know about one pulley and divide by what you know about the other pulley.

In the above example, 600 multiplied by 12 makes 7,200. Dividing this by 900 gives 8. Therefore, an eight-inch pulley is needed on the feed grinder.

The result will not always come out even, and as pulleys are sold only in certain sizes it is necessary to select the next larger or smaller pulley. When computing the diameter of a driven pulley, select the next size smaller. When computing the diameter of a driver pulley, select the next size larger.

Feed Home-Grown Crops

Stop that monthly feed bill. The Letz Dixie will cut, grind and mix anything grown—makes a perfectly balanced ration from home-grown crops. Guaranteed to increase production from 15 to 30% and cut feeding costs from 25 to 50%. A warehouse in every state.

LETZ 305 E. Road
Crown Point,
Indiana

Home-Made Food from Home-Grown Crops

WRITE TODAY for Valuable Feeding Book—It's FREE

LETZ
America's Leading Feed Mill

KAFFIR CORN
CORN FODDER
No. 180 LETZ
PORK
MILK
BEEF

Farm Facts

Condensed Items of Interesting Information

About 32 per cent of the gross weight of sweet potatoes can be converted into syrup.

Farm implements of American manufacture are coming into use in northern Ireland despite the small size of the farms. A recent demonstration of power farming with an American tractor aroused the enthusiastic interest of the farmers who witnessed it, says United States Consul W. P. Kent.

Africander cattle are said to be especially adapted to the western plains of the United States and it is proposed to import some of them from South Africa for breeding purposes. They will thrive where another animal would starve, are remarkable for their power to resist disease and can go a long time without water.

Germany's potato acreage in 1922 was only three per cent less than in 1913, but the yield was 11 per cent less. The crop totaled 785 million bushels.

Hardtack was an article of food more than 1700 years ago, the soldiers of Alexander carrying it in their haversacks. Last year France exported 33 million francs worth.

Chinese in Mexico engage in a number of businesses besides the laundry. They conduct grocery stores, while in Mexico City there are more than 100 Chinese bakeries.

The saw thistle, which is despised by farmers in the prairie provinces of Canada is providing nectar for the bees, which produced 1,800,000 pounds of honey in this region last year.

More than a million automobiles were produced in the United States during the five months from July to November, inclusive. This is 300,000 more than during the corresponding months of 1921.

Nuts are valuable food and contrary to the general idea are easily and fairly completely digested if well masticated.

There are 55,000,000 persons in Japan and only 10,000 automobiles, or one car to every 5,500 people.



DON'T put off seed-buying. At the tail-end of the buying season you get the tail-end of the seed supply and the whole supply is none too plentiful this year.

Good News For Every Farmer

Read pages 19 to 26 of this issue
of Farm Mechanics



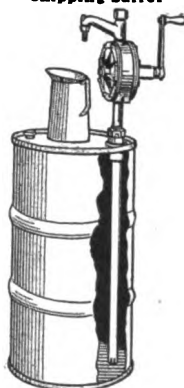
Send for This Free Book

How would you like to increase your alfalfa and clover yield tremendously; at least 100%, possibly 500%? You can do it by systematically using Agricultural Gypsum. Note the luxuriant growth as indicated on the left side of the picture, the scanty growth on the right side. Then send for our free illustrated book, which contains the full story of how Agricultural Gypsum makes possible better and more profitable farming.

GYPSUM INDUSTRIES ASSOCIATION

Dept. 11 111 W. Washington St.
Chicago, Illinois

Pump direct from
shipping barrel



Attached to barrel in
less than five minutes

Battle Double Acting Pump

ALL METAL PARTS LASTS FOR YEARS

Capacity from 1 pint to 10 gallons per minute

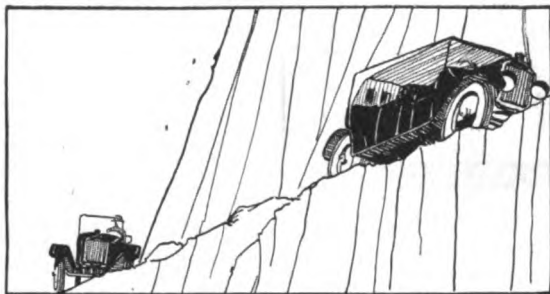
Pumps either to or from the barrel. Weather immaterial, as barrel is LEAK PROOF when pump is attached. Pumps LIGHT or HEAVY OILS, GASOLINE, KEROSENE and all other lubricant or non-lubricants except acids, STOPS WASTE, SAVES TIME, FLOOR SPACE and LABOR. Does away with the UNCLEANLINESS of FAUCETS.

Improves the Service and Increases the Profits

Implement Dealers: Write for our special offer. It is an ASSET in your business. A BIG SELLER to your trade. Every Oil Dealer, Truck or Automobile owner and Farmer is a prospect as they can pump their gasoline direct from the barrel to the tank of their machines SAVING COST OF STORAGE TANKS.

Address Dept. 22

MECHANICAL DEVICES CO., Manufacturers
AURORA, ILLINOIS



U & J Timers for FORD CARS TRUCKS & TRACTORS

A HOT SPARK WHEN A HOT SPARK COUNTS

Does your Ford or Fordson deliver that full of pep punch when its needed? Is it equipped with a U. & J. TIMER?

A U. & J. TIMER designed especially to deliver hot sparks every mile of its life is the right timer for Fords and Fordsons.

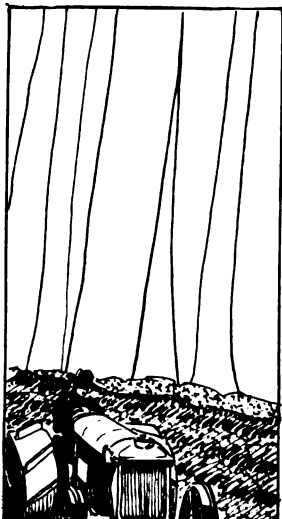
On Ford cars and trucks, the U. & J. Foot Accelerator gives you perfect gas control and keeps both hands on the steering wheel—where they belong. All steel, nickel-plated, with Adjustable Foot-Rest and Guide. It is the only foot-throttle easily adaptable to all Ford Motors.

Any dealer can order U. & J. Motor devices for you and get immediate delivery. We authorize any dealer to sell U. & J. Motor Devices on 15-day free trial—money back guaranteed.

Live dealers—write

U. & J. Carburetor Co., Chicago

Exclusive Manufacturers of U. & J. Motor Devices
Main Office and Factory: 2853 So. Halsted St., Chicago
Pacific Branch: 357 Van Ness Ave., San Francisco



Better Lambs

IMPROVEMENT in quality of live stock is undoubtedly one of the most practicable and profitable ways of increasing meat consumption. No branch of the live stock industry offers more promising possibilities for improvement than the production of sheep and lambs. The annual consumption of mutton and lamb in the United States is only about six pounds per capita, or about 4 per cent of the total consumption of all meat.

The head sheep buyer of one of the



Docking Iron and Bench for the Operation.

larger packers is authority for the statement that the consumption of "native" lambs (which means lambs produced east and south of the Missouri river) could be increased 50 per cent "on quality alone," if the producers of these lambs could be induced to castrate their ram lambs. This, he states, would eliminate the large number of cull and medium natives we get, as the ram lambs after two or three months of age worry the ewe lambs in the flock, as well as themselves, and prevent the entire flock from fattening.

The same authority states that certain sections of the country market as high as 85 per cent of their lambs un-



Lamb in Position for Docking.

\$10⁰⁰
DOWN
Easy
Payments

Cheapest Way to Clear Land



Hercules
Hand Power
Stump Puller

"How Do You Do It, Mr. Fuller?"

That's what you'll say when you get my new reduced prices on the improved 1923 model Hercules Stump Puller.

The answer is easy. I build what people want; Stump Pullers that give you the fastest and cheapest way to clear stump land with either hand or horse power—at rock-bottom prices based on volume production.



B. A. FULLER, President

HERCULES ONE-MAN HAND POWER STUMP PULLER

Fastest, easiest-operating one-man puller ever made. Four machines in one. Has quick-winding cable and other features that save time and labor. Moves like a wheelbarrow.

Hercules all-steel triple power horse machine beat the world's record in a recent contest in England. Either machine for \$10 down and easy payments.

SPECIAL OFFER — WRITE QUICK

If you order early I'll give you a valuable premium FREE. I can't tell you about it here. Send your name and address for full details. Better act quickly. Write today!

Horse
Power
Hercules



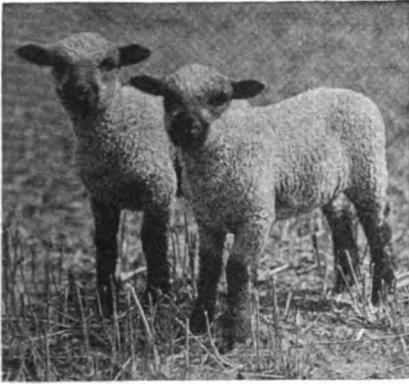
Hercules Manufacturing Co.
245 29th Street Centerville, Iowa

MAKE MORE MONEY. Read pages 19 to 26 of this issue of **FARM MECHANICS.**

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

docked and uncastrated. Every one who has observed the large percentage of inferior lambs coming to the large central markets will agree that the income of sheep producers could be greatly increased by the adoption of modern practices in sheep management.

There is much evidence to indicate that a shortage of sheep and lambs is impending, and the sheep raiser can ill



Just Twins.

afford to neglect these simple operations that have such important relation to profits.

The profit-making possibilities of the small farm flock have never been fully appreciated in this country.

New Zealand, with nearly twice the area of Illinois, has over half as many sheep as the entire United States. This indicates the opportunity for developing the industry in this country by a substantial increase in the number and quality of our farm flocks.



The Ton Litter

NOT so long ago a great many hog men thought it was an impossibility to raise a litter of pigs that would weigh a ton at seven months of age. Today a ton of pork produced from one litter is not at all uncommon. In fact, records show that litters have been produced which at seven months of age weighed over 3,000 pounds. This fact is a very important key into the future of the hog industry. A great many sows produce litters which might easily be developed to this weight. The sows do their part. The great trouble in producing large amounts of pork from a litter is that the round worm, or some of the filth born diseases destroy or stunt the pigs before they get a good start. We can not hope to raise many ton litters until we raise pigs under clean, sanitary conditions. The big problem is to reduce mortality among young pigs. Sanitation is the answer. Good feed fed under sanitary surroundings will produce the maximum profit.

FREE LIGHT POWER WATER WIND from the

Why put up with the inconvenience of kerosene or acetylene lights and hand-operated home appliances when you can have electricity—free.



generates all the electric current you can use—and at no cost at all. Your windmill pumps your water—at the same time storing up electricity for your lighting system, separator, milking machine, vacuum cleaner and a hundred other uses.

No odor, no noise, no dirt. Silent and efficient. The Fritchle Wind-Electric System is not an experiment.

Dealers

A farm electric plant that also pumps water and operates without trouble or expense is indeed an attractive proposition. If we are not already represented in your territory write us today.

Scores of these outfits in constant use for years prove their practicability and long life.

Woodmanse Oilless Windmills

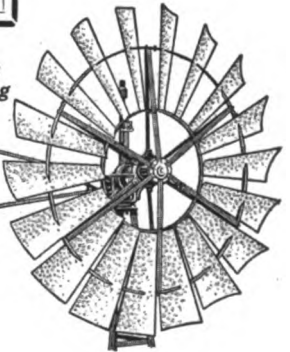
Sturdily built of the best materials. Woodmanse mills will last longer with less attention and give greater satisfaction than any others. Backed by fifty years of dependable performance.

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Run for years without oiling

WOODMANSE
MFG. CO.
FREEPORT, ILL.

Send for
FREE
Illustrated
Booklet



money for your spare hours

You may have a few free hours that easily could be turned into extra dollars. By interesting your friends and neighbors in FARM MECHANICS you can earn a tidy sum each month. No premiums or prizes, but actual cash profits for you. Our plan is liberal—and you know Farm Mechanics! For further information address P. N. R., 1827 Prairie Ave., Chicago, Ill.

Our Implement Inspector



HE finds much new and worth-while farm equipment offered to increase efficiency and cut down labor.

EDITOR'S NOTE: Farm Mechanics does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address Farm Mechanics Information Exchange, 1827 Prairie Ave., Chicago.

Auto Power Take-Off

A DRIVING unit for use on the farm permits the use of any type of automobile as a source of power for various farm purposes. Pumps, saws and other mechanisms used about the farm can be effectively driven at small cost for power, and with a remarkable efficiency in operation.

The device consists of a frame made of steel with four bearings which support two shafts at the ends of which are steel wheels for supporting the rear wheels of an automobile. On one of these shafts there is mounted a pulley for the purpose of delivering power when the automobile is mounted.

Two detachable runways mounted on the front part of the frame with the outside ends resting on the ground permit the operator to back the car upon the drive, while on one shaft there is a ratchet, which when locked enables the car to be driven off.

When connected by a belt with a cord wood saw, or cross-cut saw, the machine is an effective source of power. It is also used for driving pumps, feed grinders, threshers, or any other class of farm machinery, as well as an auxiliary power source for a windmill. Its portable character is one of its chief advantages in

that the farmer may have a source of power at any place on the farm where he desires it.

It will be noted that using this device does not entail taking off tires or dismantling the car for road use, nor does it take longer than a few moments to have it in actual operation. There is no difficulty encountered in placing the car in line with the work, nor in keeping the belt tight. The car is not run at high speed with only half or less of its power actually used, and consequent damage to the differential—objections which are common to many types of portable power units. The car is run at a very moderate speed, corresponding to a road speed of 10 to 12 miles an hour, and delivers in the case of a Ford about seven horsepower. The wear on the tires is not as great as on the road, as they run on a smooth surface with no imperfections, and with naturally no vibrations. There is no more wear on the engine or other parts than would be the case in road driving.

The device weighs complete about 140 pounds, and may be easily lifted and moved by one man. It is of such dimensions that it may be easily loaded on an ordinary Ford delivery body, complete with a cord wood saw outfit. The machine itself may be transported in the

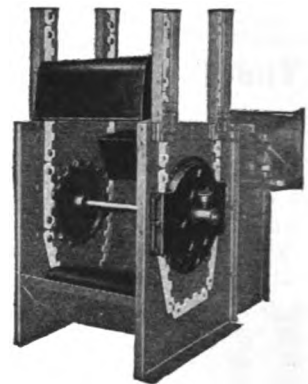
back of a Ford touring car, or on the running board. Any make of car with any size tires may be used, altho the machine is designed for a light or medium weight car. The device will transmit power proportionate to the size and power of the car.



Chainless Bucket Elevator

I NSTALLING a power elevator in the high corn crib and granary is common practice among corn belt and grain farmers. With this piece of equipment the crops can be stored with a small amount of labor and a saving of time during threshing, or when the corn crop is gathered.

A bucket elevator that is unusual in

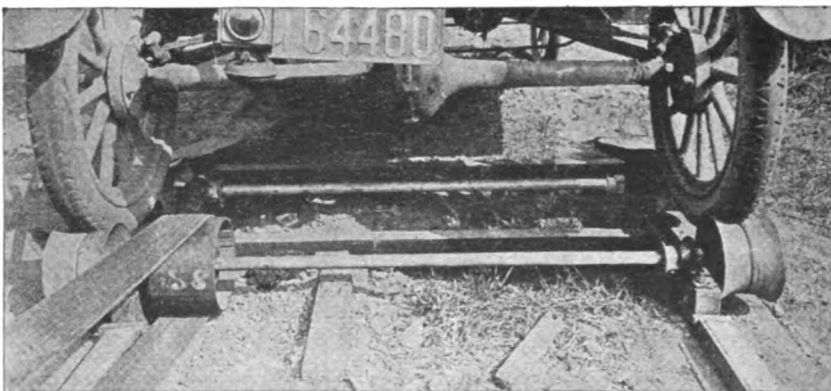


Boot of Chainless Bucket Elevator.

that it is chainless has recently been placed on the market. This elevator is of all steel construction. A series of links, or racks of stamped steel in which are notches to mesh with the cogs of the wheels on the drive shaft push the buckets to the spout.

Shown in the illustration is the "boot" of the machine. This illustrates how the power is delivered to the buckets. The links are so constructed that the elevator is roller bearing clear to the top.

Other features of this elevator are that



Power Take-Off for an Automobile.

it has only one shaft, two sprockets and two bearings.

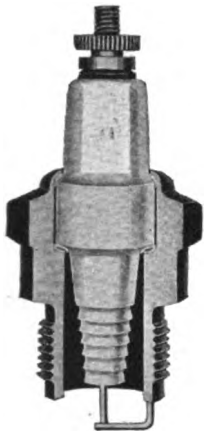
Hundreds of tests of this new type elevator have been made to determine the amount of power required to operate it. One hundred bushels of grain or shelled corn have been elevated in five minutes, while the power required forced the engine to consume only one gallon of fuel in 10 hours.

The entire elevator is constructed of high-grade steel. Another feature is that it is impossible for rats to climb it. The buckets are welded and each holds a peck of grain. The cost of this new type of elevator is low.



Carbon Proof Spark Plug

THE introduction of the new carbon proof spark plug has caused favorable comment among automotive men. Examination of one of the new carbon-proof plugs shows that a well known principle of radiation is applied to the plug insulator, and by doing so the biggest question of winter engine operation is solved.



Carbon-Proof Spark Plug

Around the inner end of the porcelain are molded a series of saw-tooth girdles, or high-temperature fins. Being sharp-edged, these fins almost instantly attain sufficient heat to burn off the oily soot that

soon coats the ordinary smooth surface porcelain and shorts it, completely or partially. Since there are several of these fins, the coating cannot become complete and the plug is always efficient.

The carbon-proof plug was developed for winter use, to eliminate the hard starting, spluttering, back-firing and other troubles of cold weather operation. More and more automobile owners are coming to realize that engine operation in cold weather demands certain changes in equipment from the ordinary hot weather items and adjustment. Many car manufacturers recommend a different, lighter grade of oil for cold weather; no motorist would think of leaving his car stand without a radiator covering, or anti-freeze solution. Similarly, spark plugs should be changed for winter driving, but until this season no special winter plug equipment was available. The new carbon-proof plugs, however, are made for all makes and types of engines.

Small Tractors Work Great with Dick's Blizzard Ensilage Cutters

*What owners say of
BLIZZARDS Run by Tractors:*

At Sheridan, Indiana: "Before buying a cutter our only doubt was whether or not the . . . tractor would pull it, but we soon found with cutter fed to pull capacity, it did not require all the power the tractor had." C. O. OGLE.

At Soldiers' Grove, Wisconsin: "Your Blizzard is right in every way. We used a (popular tractor) for power. The best time was made filling a silo 12x30 ft. The little machine filled it in seven (7) hours." S. L. COULTER.

At Sparta, Michigan: "We are more than satisfied with the 'S 22' Blizzard. It is just the right size to hitch to a . . . tractor, which we used, and will take the corn as fast as a man can unload." G. S. FELT.

At Byron Center, Michigan: "The Blizzard is a strongly built, light running machine, and the . . . tractor can handle the S-31 in fine shape. Sixteen silos were filled with this outfit this fall, without any expense whatever outside of oil and fuel." J. H. LUCAS.

1923 Blizzard Models Have New Features Biggest Values on The Market

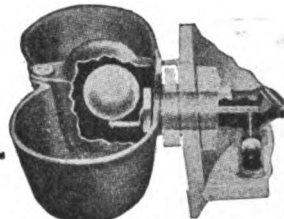
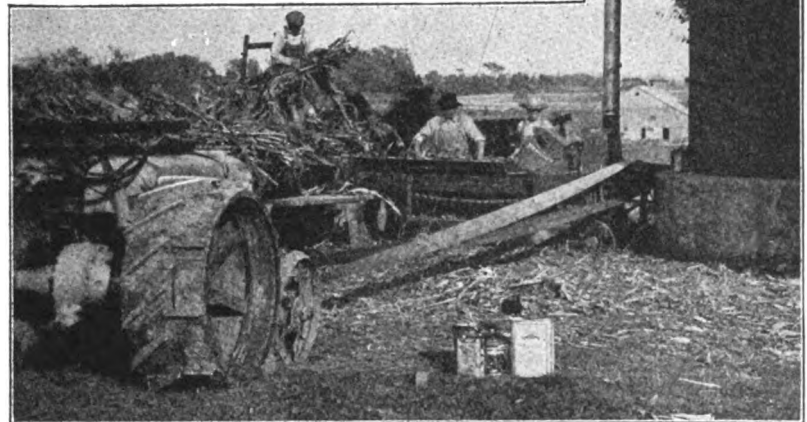
Backed by 25 years of satisfaction. Famous for light running. Biggest capacity per horse power. Write for particulars.

DEALERS

Why don't you look over the dealer's proposition on Dick's Blizzard? It's a real opportunity. Sending the coupon entails no obligation; it will simply bring you full particulars.

The Joseph Dick Mfg. Co.

Box 606, CANTON, OHIO



THE "BEST" STOCK FOUNTAIN "HOG WATERER"

Don't expose your live stock to possible disease by permitting them to drink dirty water. Give them a "BEST" Fountain. It is strongly made with a cast iron pan and divide, brass working parts and a soft rubber valve. See the "BEST" at your dealers or write.

STERLING FOUNDRY CO.

8 Harvester Street,

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STERLING, ILLINOIS



—but Mother's Work Is Never Done.

Man, if you did the housework! If you faced that sink full of dirty dishes three times a day—that cream separator every morning and night—the always-empty water bucket—that heavy broom on sweeping days—the weekly wash—if you had this health-wrecking, back-breaking, daily grind you would own a

Phelps

Power and Light

as quickly as it could be installed. The Phelps cuts chore hours to chore minutes for your wife. Does the milking, wood-sawing, feed grinding and pumping for you. You need it 24 hours a day, 365 days a year.

Two Books Free

Write for them. Study them. See how other men's wives are keeping their youth. See how other men are making the Phelps pay for itself in a year or less by labor saved. Mail the coupon.

Phelps Light & Power Co.
Rock Island, Ill.

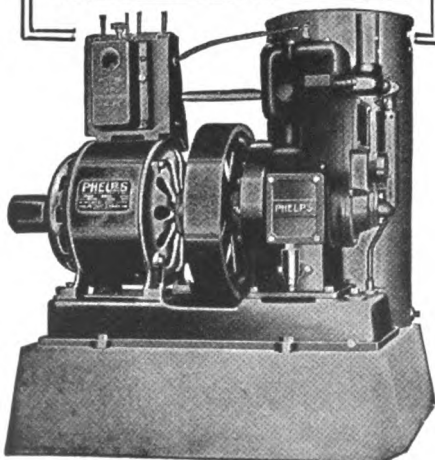
PHELPS LIGHT & POWER CO.
614 First Ave. ROCK ISLAND, ILL.

- ☐ Send me your 2 FREE BOOKS.
☐ Send me your dealer franchise facts.

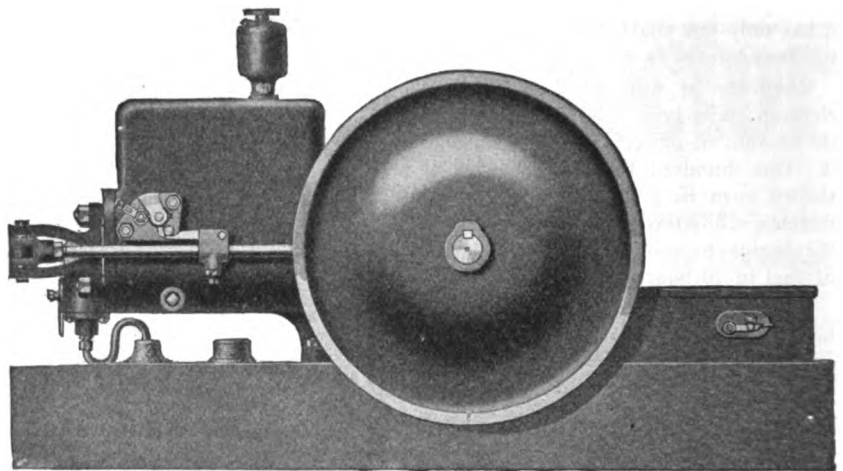
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WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS



New Low-Priced Farm Gas Engine of 1½ Horsepower.

New Low-Price Small Gas Engine

A NEW 1½ horsepower gas engine that is made to sell at an exceptionally low price and at the same time is well built, has been placed on the market recently. The engine is shown in the accompanying illustration. Well designed and made of the best materials this engine is smooth running, well balanced and will develop its full power.

Features of this engine that will interest users are the ignition, which is of the make and break type; a high-grade magneto and batteries; drop forged crankshaft; suction feed carburetor; two disc flywheels and inlaid crankshaft and connecting rod bearings.

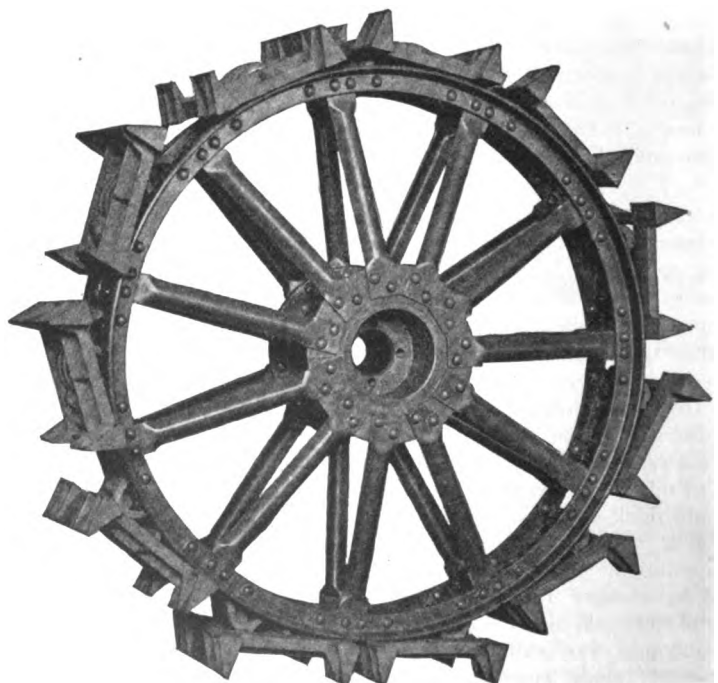
As will be seen by the illustration, the engine has a good appearance. It comes mounted on either skids or a hand truck.

Ground Grip for Fordsons

A VERY useful product as an accessory to a Fordson tractor is the wheel shown in the illustration which is made complete ready to be put on the axle of Fordson tractors.

The wheels are made up of a heavy iron hub, accurately machined, pressed steel spokes securely riveted onto the hubs and the steel rims. The rims consist of steel angles, bent to a perfect circle and welded at the joints. These rims are held together with malleable iron spacers which are riveted to the rims.

The shoes or grips, eleven of which are on each wheel, are held in place by teeth, which are boked to the malleable iron spacers. The design of the teeth is the same as an involute gear tooth, and these teeth engage in the shoes or



Fordson Wheel Equipped with Ground Grips that Increase Traction and Power.

grips same as a rack and pinion, allowing no slippage whatever when engaged. The shoes are provided with prongs which set into the ground but do not dig in, merely set down in a vertical direction allowing the wheel to roll on them, and after the wheel has passed over the shoes, this shoe will be lifted up again in a vertical line. This action prevents the wheels from digging themselves in and allows the tractor to travel over soft ground, over which it would be impossible to travel with the ordinary wheels. The shoes and the teeth are made up of high carbon electric steel, heat treated, thus giving a long life as wear is concerned.

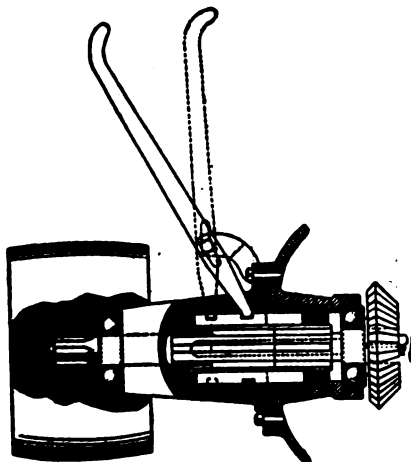
As stated above, there being no slippage, less fuel will be required and a greater distance can be traveled with the same amount of fuel than with ordinary wheels, as there is no lost motion when pulling loads.



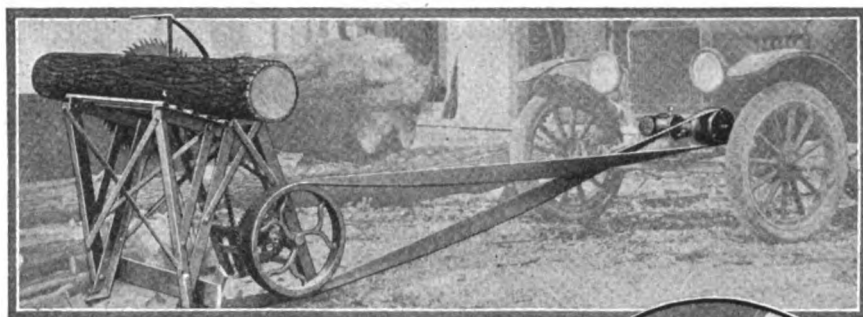
Clutch Pulley for Fordson

A CLUTCH pulley that also acts as an idler has been designed for Fordson tractors. Its construction is shown in the accompanying illustration. To start the pulley all that is required is to pull the lever toward you and away from the tractor. A yoke attached to the lever moves a broached sleeve engaging the splined shafts, making them integral. To stop the pulley the lever is pushed back, thus disengaging the shaft. The handle is slotted which makes it certain that the sleeve will remain in position.

The pulley replaces the standard Fordson pulley. As it acts as an idler it enables the operator of the tractor to back into the belt and get it tight and in alignment. The pulley is constructed of high-grade materials and is solid and substantial. The pulley may be left on the tractor the year around and it will not throw dirt or oil into the face of the operator.



Clutch Pulley for Fordson.



Saw wood with your Ford!

Complete outfit (as illustrated) Addix Power Pulley and all-steel saw rig (belting extra when ordered) **\$55**

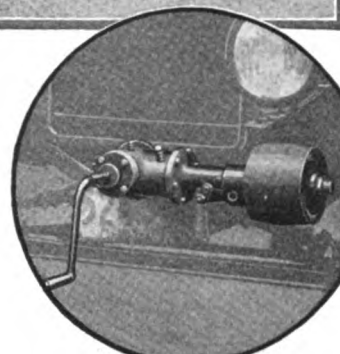
Saw wood for yourself and others, or run machinery, pumps, feed grinders, separators, light plants, or drive wells, with power from your Ford!

The Addix Power Pulley makes your Ford engine useful whenever you need power. Quickly and easily attached by anyone. Once attached always ready and always with you. No jacking up of car, no wheels to change, simply slip belt over pulleys, back car to tighten belt, and start your engine! Engine speed automatically controlled by variable speed governor which controls gas feed, saves gas and prevents engine racing. Clutch throws power on and off without stopping engine.

Order today from this advertisement
Satisfaction guaranteed or your money back
More information on request

THE AUTOMATIC ACCELERATOR CO., 1205-7 Harrison Ave., Cincinnati, O.

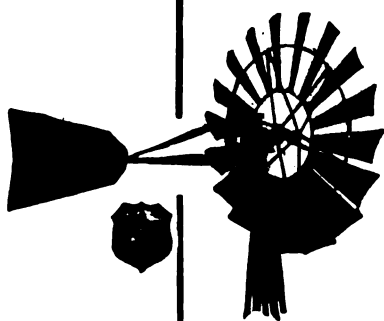
ADDIX Power Pulley
with variable speed governor
for FORD CARS and TRUCKS
MAKES YOUR FORD AN ALL-ROUND PORTABLE POWER-PLANT



"I have used the Addix Power Pulley and saw rig with highest satisfaction.
E. G. Ranshaw, R. F. D. 1, California, O.
"The Addix Power Pulley is doing splendid work on my cord wood saw and feed grinder. No mistake in buying an Addix outfit."
Charles Brooks, Withamsville, O.

Challenge Self-Oiling Mill

Lightest Running, Simplest, and Most Durable Mill Made



Five Large HYATT Roller Bearings. (Same as used on your tractor or automobile.)

Semi-Steel Gear, Pinion, and Rocker Arm. (25% stronger than cast iron.)

Large Oil Reservoirs that hold one or two years' supply.

Self regulating and storm proof.

Oil but once everyone or two years.

Easily repaired — Easily erected.

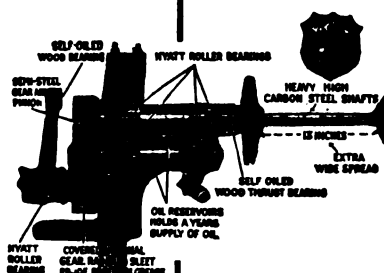
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CHALLENGE COMPANY
181 River Street Batavia, Ill.

Manufacturers of

CHALLENGE Engines, Wood Saws, Feed Grinders, Ensilage Cutters, Pumps, Cylinders, Tanks, Corn Shellers.

Branches — Kansas City, Mo. — Omaha, Nebr., Minneapolis, Minn.





Our Readers Are Requested to Make Free Use of this Department for Questions and Answers on Modern Farming and Farm Improvements

Radio Equipment

Editor FARM MECHANICS:

Instead of making your own variocoupler and variometers, would a factory made variocoupler with a wave length range of 150 to 800 meters and two variometers with a wave length range of 150 to 500 work well in the set described by Mr. Carr?

Would three Radiotron vacuum tube detectors called amplifier oscillators Model UV-201 be the correct size for this work? Also, would this set have sufficient strength to operate a Pleco-phone (Federal) loud speaker successfully?

I am an amateur and I know hardly anything about this work which I have estimated to cost about \$100 complete with batteries, tubes and loud speakers.—FRANCES P. KEEFE, Rexville, N. Y.

Answer—Factory made coils should work well, but why not save that \$15 or \$20?

For the detector you can use either UV-200 or C-300, and for amplifiers either UV-201 or C-301. These are the two most popular brands.

Use a tube marked "detector" as your detector bulb. Also use a tube made especially for amplifying as your amplifiers. All these tubes are marked "amplifiers."

Loud speakers work satisfactorily if you live within a few miles of a broadcasting station, but for greater distance

"power" loud speakers such as the "Magnavox" should be used. This speaker gets special power to operate it from the storage battery.

Personally, I don't think much of loud speakers. In all my experience I have decided there is nothing better than a real good headset like the "Baldwin Type C." Any good "supersensitive" headset will do.—A. H. CARR.



Hen House Light Control

Editor FARM MECHANICS:

There is no magazine entering our high school that is doing more to stimulate a desire to remain on the farm than does the FARM MECHANICS.

Have you a plan for turning the lights on in a hen house at 4 o'clock in the morning? We are also desirous to know if there is a way to heat water by electricity used by the poultry men of the country. We desire to have the water heated soon after the lights are turned on.

If you have such plans as these, we would appreciate receiving them.

The boys in our high school are all taking a farming project and we are trying to encourage them in doing things in the most scientific way possible.

Thanking you for what information you can give us in this line, I am

H. MILTON HALES, Supt.,
Independent School District No. 4,
Sugar City, Idaho.

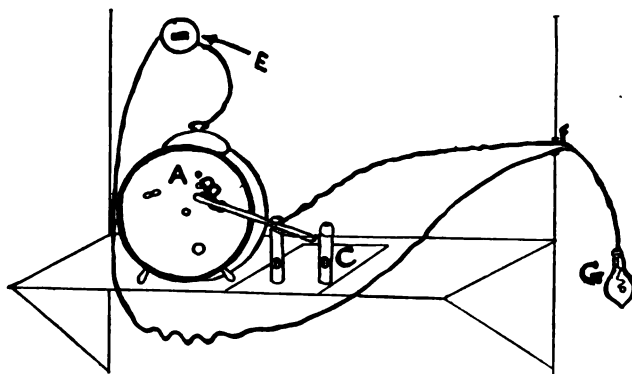


Wants Big Radio Set

Editor FARM MECHANICS:

I have been following the articles by Mr. Carr in FARM MECHANICS as to how to build a 1,000-mile radio set, and have been greatly interested. I would like to build a somewhat more elaborate set, one embodying three stages of radio frequency and three stages of audion amplification, etc. Would you please ask Mr. Carr if he has detailed plans and specifications of such a set as I have in mind? Also if he would care to help me?

His 1,000-mile set is described more plainly and completely than any I have ever seen, and I would certainly be very



Alarm Clock to Turn on the Lights in the Hen House.

Answer—A hen is much more valuable if she does not believe in the "eight-hour day." Hens lay more eggs if they get up and go to scratching at four or five o'clock in the morning in winter as well as in summer. Therefore, a home-made device for turning on the electric lights in the hen house will get the hens up and at work long before any mem-

thankful for any information and help which he would care to give me.

I think FARM MECHANICS is a fine magazine and would not be without it for any consideration.—JOHN E. RIDGE, Greenview, Ill.

Answer—We would not recommend such a set as you describe for amateur use.

A radio set can be made and operated very easily even by a small boy up to two or three bulbs, but when more than this is used it becomes a very complicated instrument, indeed.

Such a set as you ask about draws so much current from the storage battery that its use is prohibitive.—THE EDITOR.



Charging Batteries

To the Expert:

My son and I have been readers much interested in all your articles, especially in your service department. Will you inform us what is wrong?

We bought a charging panel size 2-32 volt for our lighting plant and instead of charging my Ford batteries we drained them, altho ammeter on panel read charge and ammeter on plant showed discharge, when not running. We had panel set to charge between 5-3 amperes. Can you advise us on this subject?—C. E. OLSON & SON, Underwood, Minn.

Answer—It is hard to give you any intelligent information without knowing what kind of a lighting outfit you connected the panel to and whether it was equipped with a cutout. Your description would suggest that the batteries you were charging were discharged back into the generator after it was shut off. This would account for the ammeter on the plant showing discharge when the generator was not running.

The purpose of a cutout between the batteries to be charged and the generator is to allow the current to go into the battery, but not out of it. If your plant has not one of these you might remove the one on your Ford car, which is located on top of the generator. Connect the positive wire of the plant to the terminal on it that had the wire connected onto it when in the car and connect a wire from the post that was fastened to the Ford generator terminal to the No. 1 post on your panel. It will now act just as it does in the car and you should have no trouble in charging your batteries.—F. M. SERVICE.



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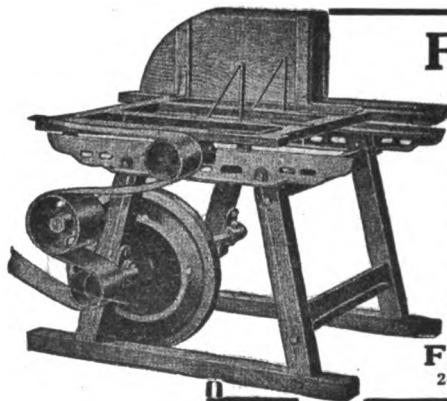
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Helps for the Housewife

MECHANICS in the HOME



Ironing Day Hints

By DORIS W. McCRAY

WHAT woman is not glad when the ironing is over with? In fact, there are many who say they would rather wash than iron. The women who make this assertion are usually ones who have an up-to-date washing machine, running water, and a clean, light laundry room. Good equipment for ironing will bring a reward of less weariness Tuesday evenings 52 weeks of the year.

If electricity is in the home of course there must be an electric iron, since the cost is small in comparison with the time saving. You can save from one-fourth to one-third the time from the usual ironing day by having one. Then there are alcohol and gasoline irons. Flat irons should be kept in a dry place. Polishing with the finest steel wool will remove any roughness. Rubbing with paraffin when hot makes them slide easier.

For an ironing board select wood that will not warp. Choose one that will stand by itself with a simple adjustable support, so that the end of it may be used for ironing gathers and sleeves. It should be just long enough to iron a sheet comfortably. A board attached to the wall will fold up into a cabinet, and is always ready for use, yet it cannot be moved out on the porch where the breeze is coolest in summer.

The sleeve board is handy for baby clothes, and ruffles, as well as long fitted sleeves. It can be fitted with a pad made from an old blanket, the same as the large ironing board has. Slip covers for the ironing board can be made quickly, using the sewing machine hemmer for the edge finish, fastening tapes which will tie together. Since this cover will receive hard wear, and cannot be used successfully after it has holes in it, I buy new strong material for it, and use up the old sheets in some other way, usually making from them slip covers for dresses.

What to Iron First

There are few tricks to the trade; every one knows how to iron, yet I might suggest that the starched clothes come first before you are tired. Iron first the part of the garment that will become the least wrinkled, thus: for a man's shirt, collar band, then sleeves, cuffs, yoke, back, fronts. For a blouse, iron the collar last. The trimming comes before the garment. Iron embroidery wrong side up on a bath towel, lace on soft flannel. Iron ruffles, hem, then the rest of the skirt.

The best gloss is obtained by ironing tablecloths on both sides. Iron first the wrongside, fold, iron other side. In making the last fold, pull back the upper half from one-fourth to one-half inch to allow for the thickness of the material.

For woolen or silk, be sure the iron is not too hot, as the animal fiber is easily injured by heat.

To Iron or Not to Iron?

One of the best ways to ease up on ironing day is *not* to iron many of the pieces which custom prescribes should be ironed. While the heat of the iron will kill possible bacteria, and make the clothes more sanitary, this is not necessary if they are washed well, and sunned. Sheets, towels, and dish towels are just as sweet and clean even not ironed. Take from the line, fold smooth, and put away. Stockings and knit underwear can be smoothed enough with the hand when folded after mending. Crepe nightgowns and combination suits, and seersucker undershirts need only smoothing out with the iron.

Let us suppose your average ironing takes four hours. If, by eliminating sheets, and these other pieces, you can get it done in three hours, you are 52 hours ahead each year. One busy farm woman I know saves ironing two tablecloths each week, by using oil cloth lunch sets. She uses tablecloths just for Sunday or company. She has one charming tablecloth made from oil cloth which her daughter decorated in blue to harmonize with the china. A neighbor of hers believes it better to use white tablecloths, and makes one last a week by teaching the children to be careful.

One place where it is poor economy to cut down on ironing is when it comes to housedresses. The housewife may wear clean unironed underwear, but it does look so much better to have the dress starched and ironed.

For the woman who can afford it, the mangle saves time. If she is not strong, and has to hire someone to do the ironing, perhaps she would like to hire this efficient machine. Bungalow aprons, nightgowns, combination suits, rompers and children's aprons may be made flat, and ironed in this way.

Where is Your Mind When You Iron?

Like the factory girl who goes thru the same simple operation hundreds of times in a day, when you are ironing, the work itself is automatic and requires little thought. It is the monotony



Not Every Woman Can Listen to Music by Radio When She Irons, But Some Farm Housewives Do.

of it that tires one out. It is not interesting work like cooking. The mind is left free to wander where it will. If there is company, there is something interesting to talk about. In fact, a neighbor who drops in with her mending in the afternoon will make the ironing go faster. But if you are alone, there are always interesting things to plan. For instance, one can plan the menus for the next day, or the menu for company Sunday dinner. With plenty of time to think it out, anything can be ordered from the grocery, or a list made for the next trip to town. The next day's work can be planned,



Folding Ironing Stand Saves the Back.

the wardrobe, the housecleaning, or whatever task comes next. Thinking ahead of time will save time when the work is started.

One woman memorizes poetry while she irons, another figures out how she is going to trim a hat. Working the mind seems to keep it from becoming weary. "Ironing day is a good time to put many irons in the fire."



WHEN you patch that torn place on the wall paper tear the patch instead of cutting it; it will show less.



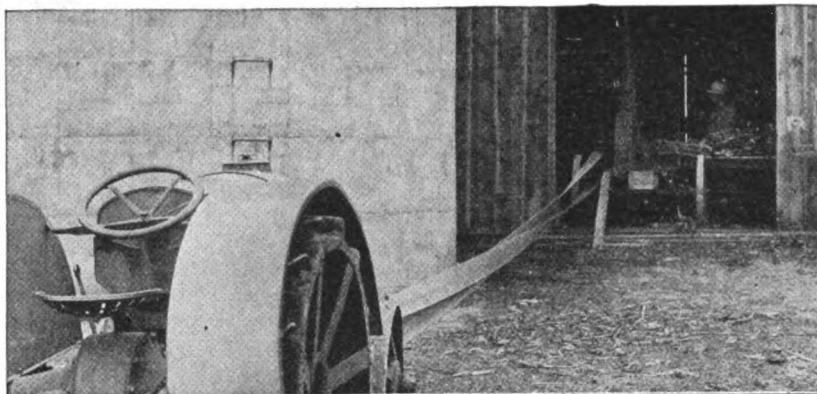
SLATES may be out of date in the schoolroom, but one hung up in the kitchen is helpful to jot down things needed from the store.



EMBROIDERED pillowslips that break in the centers don't have to be thrown away. They make nifty petticoats for the little girls.



THE power of the press goes into the kitchen. Newspapers under the oil-cloth on the kitchen table make the oil-cloth last longer.



THE BELT FOR YOUR TRACTOR



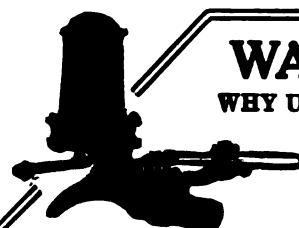
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WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

Gypsum Makes Legumes Grow

By PROF. GEORGE A. OLSON

THE discovery that applications of agricultural gypsum increase the yield of legumes in eastern Washington has had a tendency to enlarge the acreage because a diversification with a legume in the rotation has a direct influence on subsequent grain crops. The growing of legumes requires comparatively little attention and they are good crops to grow for food since the protein in them supplements that contained in grains, thereby curtailing expenditures for other forms of nitrogenous feed.

Prices paid for alfalfa are usually good. With increased acreage and better yields, the tendency in the future will be to sell less and feed more to stock with the object in view of keeping up the market price. In other words, agricultural gypsum has made legume growing a worth-while proposition and at the same time has brought about a satisfactory system of rotation with the possibility of caring for a large number of stock.

Many farmers have observed that grain crops frequently burn when grown on land previously in legumes. For this reason legume growing is often discouraged. There is very little danger of crops burning, however, providing certain precautions are considered and followed.

Careful study of some of the causes for burning has revealed that much of the nitrogen in soil previously in legumes is quickly oxidized to the nitrate form. The result is an increased nitrate content in the soil. This increased amount of available nitrogen has a tendency to stimulate stooling and cause vigorous growth with a consequent requirement for water since transpiration is augmented.

Obviously some of the soil moisture is held firmly by organic matter. This, together with that lost thru transpiration evaporation leaves hardly enough water available to completely carry or move the food mass from the leaves and stems to the grain "sack." Naturally, under such conditions the plants dry up (burn) and the kernels cease to develop.

There are two well known methods of controlling a condition such as has been described. One of them is based on knowledge that among the organisms lodged on straw there are some which have the property of decomposing nitrates and thereby liberating nitrogen. The process is one known as denitrification. Consequently organisms adhering to straw turned under with stubble from a legume field aid in decomposing ex-

isting nitrates and thru this means reduce the supply of nitrate for the plants. This process curtails the stimulating effect of nitrates on early and vigorous growth and less water therefore required to complete the cycle of growth.

Another method of controlling yield is to sow about one-third the usual amount of seed so that any stimulation which might occur thru increased nitrification would not be sufficient to overtax the available water supply. This procedure is preferred since it has the advantage over the former of conserving nitrogen added to the soil thru the growing of legumes.

There is another point which needs consideration and that is the influence on the quality of cereals, especially wheat, following legume crops which have been treated with agricultural gypsum. During the past year this question has received considerable attention.

For the experiment wheat was grown on two plots which had been in alfalfa. In one of the plots alfalfa had been grown in the presence of agricultural gypsum. An increase of three bushels of wheat was obtained on the gypsum treated plot and the wheat when analyzed was found to be of superior milling quality.

Excellent milling wheat was obtained on land previously in some kind of legume. It was not known, however, that agricultural gypsum would make a more decided improvement in the milling quality of wheat grown on the treated alfalfa plot.

The importance of agricultural gypsum in agricultural practices exceeds expectations. Not only has it increased the yield of alfalfa in the Pacific Northwest; it has also improved the quality and color. Besides these facts larger yields of wheat and of most excellent milling quality have been obtained.



More Legumes Mean Money in the Pocket

THE best reason why dairymen should use more legumes in feeding their cattle is because it puts money in their pockets, say the specialists on animal feeding at the New York State College of Agriculture. There is no better basis for a dairy ration than clover or alfalfa hay, and good corn silage. The greater the capacity of the cows for high quality roughage, the cheaper can milk be produced, since the quantity of concentrates can be reduced.

Where low protein roughage is fed, the grain mixture will require 60 per cent of high protein and 40 per cent of low protein feedingsuffs. With high protein roughage, the extra cost on 20

per cent of high protein feeds made necessary by low quality roughage is saved.

Under favorable conditions the use of legume roughage ought to reduce the cost of production from 17 to 25 per cent.

By "feeding" the soil calcium and phosphorus, the mineral content of pasture and forage may be doubled. Thru the use of legumes it is possible to maintain the mineral reserves of cows and young stock, and thru the variety and abundance of proteins and other elements thus supplied, furnish the cheapest and most efficient rations for both growth and production.



Cheaper Milk Comes Thru Proper Feeding

TWO factors control the economical production of milk, says M. H. Keeney, dairy specialist of the New Jersey State Agricultural College. They are:

1. The adaptability of the cow, that is, her inherent ability to produce milk, judged by her conformation and indications of dairy temperament, and by the milk scales and the Babcock test.

2. The amount and kind of food eaten.

The feed bill is the largest direct expense in milk costs. Hence economical feeding is of relatively great importance in lowering production costs. The price received for milk is largely controlled by the laws of the market and the dairyman has only a limited control over prices. The dairyman's high road to success lies in producing a unit of clean, wholesome milk for the least possible cost.

The first essential for cheap milk is good cows. The other essential is proper feed and care. It may be summarized briefly in three words—feed, weed and breed.

Silage and alfalfa hay are the basis for cheap milk. They are the best and cheapest roughage feeds. Every dairyman should aim to have them as soon as possible.

1. Feed all the roughage a cow will clean up. Part of it should be a legume such as clover or alfalfa.

2. Feed some succulent feed, such as silage or roots.

3. Feed a balanced ration.

4. Feed grain in accordance with milk production; for a Holstein or Ayrshire, approximately 1 pound of grain for each 3 pounds milk. A variety of grains in the mixture is desirable.

5. Feed and milk regularly.

6. Supply an abundance of pure fresh water at all times.

7. Give access to salt daily.

8. Purchase grain feeds on the basis of their protein and energy content and not alone on just the cost per hundred weight.

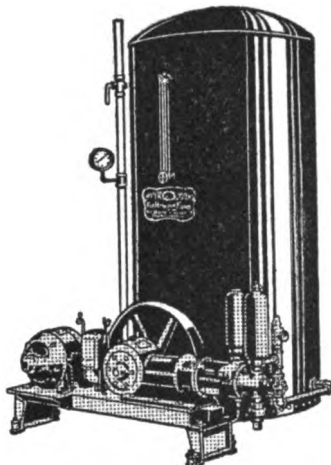


PRIce per ton is a poor way to figure the cost of mixed fertilizers.



SAVE all trees for lumber that will make lumber. Use only defective ones for firewood.

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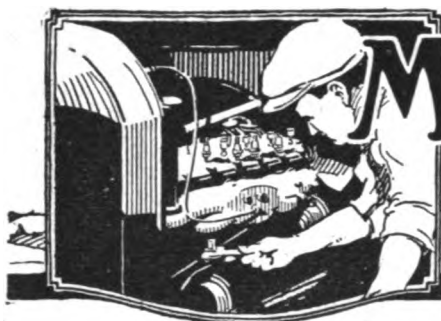
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Motor Trouble Advice

By F. M. Service



Carborundum Wheels

To the Expert:

Thru the columns of FARM MECHANICS please give me the reason for the glazed condition of the so-called carborundum wheels after they have been in use for a time. Also the remedy or cure for this condition.—L. H. NELSON, Winthrop, Minn.

Answer—A carborundum or emery wheel becomes glazed from the small particles of material from the pieces being ground that collect in the pores of the wheel and eventually fill up the wheel so as to practically stop it from cutting.

The remedy is to purchase an emery wheel dresser from any machinist supply company and with this tool the surface of the wheel can be cleaned and any ridges, etc., dressed off.—F. M. SERVICE.



Advice from the Field

To the Expert:

I know we are supposed to ask and not advise, but after three years' use of a Fordson I feel that experience justifies me in saying that the only way to successfully lubricate outer bearing on Fordson pulley is to take pulley from shaft and "pack" that bearing with cup grease. It does not get oil from the crank case. Positively not enough for continuous use as I give it. Once each month pack with grease.

This is in reply to what I see you advise Arvid A. Bergdahl of Skandia, Mich.—R. SHERMAN ROBBINS, Hartsville, Pa.

Answer—You certainly are wrong if you think that we do not welcome any advice you can give us, as it is the men in the fields actually operating the power machinery that are the ones who really are able to gather the experience and uncover the hidden faults on which the future development of power farming machinery will depend.

The method you suggest of lubricating the outer bearing on the pulley shaft is a good one and will solve the problem for any tractor owner who has a pulley that is giving the same trouble as Mr. Bergdahl's gave.—F. M. SERVICE.

Mr. Service will answer free of charge for Farm Mechanics readers questions of general interest on Automotive troubles. As a "trouble shooter" he is probably the best equipped man in the industry, having diagnosed the ailments of thousands of automobiles, trucks and tractors. Put your troubles up to F. M. Service—Editor.

Ford Magnet Coils

To the Expert:

Can a double wound oblong coil field coil be used with the $\frac{5}{8}$ -inch magnets used in the Ford model T engine? If not, why not, or will it be inclined to weaken the magnets?

I have noted by the Ford parts price list that the present $\frac{3}{4}$ -inch magnets have been used since 1915. Also present single wound coil. What magnets was the double wound oblong coil used with? If with the $\frac{3}{4}$ -inch magnets why was the change made in the field coils?—JAS. HEANY, Cedar Rapids, Nebr.

Answer—You could use the double wound field coil with the $\frac{5}{8}$ -inch magnets, but it would be necessary to shim it out $\frac{1}{8}$ of an inch from the motor block in order to bring it out to make the proper distance of 1-32 of an inch between the coil and the magnets. This combination would produce a strong current sufficient to operate the ignition system and the lights.

The reason for the change from the double wound to the single wound field coil in 1915 was to increase the amperage of the current generated to take care of the headlights which were first installed by the Ford Motor Company at that time. The same $\frac{3}{4}$ -inch magnets have always been used with the oblong coils both single and double wound.—F. M. SERVICE.



Transmission Trouble

To the Expert:

Will you please answer the following questions:

I have owned a Ford car for two years and have had trouble with the transmission band linings. They get hard and then they jerk and chatter.

I have to put three different sets on my Ford every year and every time I put on the very best band linings I can get. What is the cause of this? I don't drive much, and I use the best grade of oil I can get.

I also have a Fordson tractor. How am I going to use it this winter on frozen ground? I can't keep the wheels from slipping. Where can I get ice lugs?—RAYMOND SORNSON, Exira, Iowa.

Answer—The cause of the trouble you are having with the transmission bands in your Ford car is not caused by the bands themselves or the transmission, but is directly due to the oil you are using. The chatter is caused by the oil burning up under the tremendous friction generated when the band is compressed and this burnt oil in the form of carbon and residue is deposited in the fibre of the band lining and acts on the transmission drums very much as rosin does on a violin string, which is a series of vibrations and which produce the chatter.

If the present bands in your car are now in such condition that they chatter, it will not be necessary to change them to eliminate this. Simply drain out the oil from the crankcase and refill with any of the well known brands of non-chatter oil made for Ford cars.

One way to use your tractor in frozen ground when the present lugs slip is to have your blacksmith make some long pointed bolts that will fit into the extra holes in the rear wheel rims. If these holes have not been left in your tractor you can drill them in using a $\frac{1}{2}$ -inch drill and spacing them about one foot apart around the wheel, with two rows about 5 inches apart on each rim. The spiked bolts should have a $\frac{1}{2}$ -inch threaded end to fasten in the holes, with a shoulder one inch wide and coming to a point about three inches long. These combined with the lugs will eliminate all slipping.—F. M. SERVICE.



Fordson Ignition Trouble

To the Expert:

I am having ignition trouble with my Fordson tractor. Could scarcely get any spark at all, and what I did get was intermittent. I replaced the magneto coil assembly with a new one. I have a good

strong spark now, but the engine still misses, especially when I am not pulling hard and part of the time when I am pulling hard. Have had my coil units tested and have installed new coil vibrator bridges and coil vibrator armatures, new commutator case, new spark plug wires and new commutator wire assembly and examined the magneto wire and installed new spark plugs. Still it misses a great deal, causing a great deal of blue smoke to come from the exhaust pipe and very little power. I also put in a new vapor tube. Had the block rebored and new crankshaft pistons and valves and guides above five months ago. Still it misses a great deal and has little power. It has good compression. I have cleaned the carbon from the cylinder head and the block.

The threads in the cylinder head, where the spark plugs go, are worn so that a small amount of compression leaks out around two of the plugs. Do you think this would be causing my trouble? Would you advise me to have the threads recut where the spark plugs go for a $\frac{7}{8}$ or $\frac{3}{4}$ -inch spark plug? Which size would you advise me to use? Would this change alter the running of the motor in any way?—J. M. FOREE, Godfrey, Ill.

Answer—You certainly have tried almost everything possible to eliminate your trouble, tho the following are some suggestions that you may have overlooked and could be causing you trouble.

1. The carburetor may be in need of repairs, such as a bent needle valve or broken seat. The choke butterfly may be sprung, causing the air to be partially shut off, even when in the open position. This would account for the heavy smoke and lack of power.

2. An air leak in the intake manifold or where it fastens to the motor block would cause too much air to enter the motor and cause it to run irregularly.

3. One or more weak exhaust valve springs would retard the valve action and cause trouble even if the motor had good compression when cranked. This trouble can be detected by putting a heavy washer between them and the spring seat to increase the tension. If the motor operates better when this is done, then install new springs.

4. Too great a clearance between the valve stem and the push rod will cause loss of power as the valves are not opened far enough. The correct clearance is never more than 1-32 of an inch or less than 1-64 of an inch.

5. Check over your ignition system again, being sure that the spark plug points are 1-32 of an inch apart, that the coil units are adjusted so the vibrator

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RAYBURN BROS.

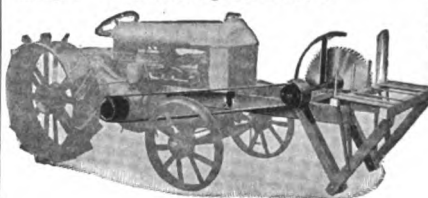
"I have operated my new Ditcher since the 1st of August (four months) and the last month I haven't worked with it very much, but in all I have made \$2600.00, with no factory bills and just the expense to run it." F. G. DALRYMPLE.

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Fordson was made to work 365 days a year—if necessary. Don't let it "lay off" a day more than you can help—make your investment really pay!

The "Rowell Forty" Saw Rig

For a small cost, keeps your Fordson busy sawing wood on those days when you're snowbound or it's too cold for outside work. Saws fast—clean! Saws the toughest stuff you can feed it. Write for prices and particulars—

The I. B. Rowell Co.
Waukesha, Wis.

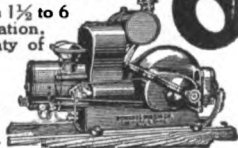
My Engine Will Do the Work of 6



Write now for facts about this wonder engine. Same engine gives 1½ to 6 H. P. Gasoline or kerosene, portable, light and free from vibration. No cranking. Pumps, saws, grinds and does all chores. Plenty of power for every purpose. Easy to operate.

Low Factory Price—Special Offer

Price now lower than before war. Tremendous value. Write at once for catalog and special offer on this amazing engine.
The Edwards Motor Co., 328 Main St., Springfield, O.



Solving the Mystery of Space

The world does move. There is no longer any mystery to space.

Copernicus, Keppler, Galileo and Newton have solved it. Man now knows that the earth moves round the sun. The stars have been weighed and measured.

There need be no more mystery to advertising space.

Through the great co-operative organization known as the Audit Bureau of Circulations, publishers, advertisers and agents have solved it. The buyer of advertising space can now see through the mist of figures and measure circulation. With an A. B. C. report and a copy of the publication he can weigh circulation, editorial influence, and determine reader interest.

The reports issued by the Audit Bureau of Circulations upon every publisher member provide facts by which circulation can be thoroughly tested for its value to any specific product, or merchandising problem. Unless these facts are secured and used there is bound to remain a large element of mystery—of doubt—in the selection of advertising space.

FARM MECHANICS is a member of the Audit Bureau of Circulations. Its A. B. C. reports are furnished any advertiser upon request.

is 1-32 of an inch from the bridge point when the spring is held down and last that the timer roller has enough spring to it to bring it into good contact with the contacts on the timer shell. And that the timer shell is in correct position when the spark rod is advanced. If all the above points are correctly adjusted and inspected the tractor certainly should hit on all four and develop its maximum power.

The leaky threads in the spark plug holes would not cause a serious loss of power and the only way to correct the slight leak is to replace the cylinder head, as the holes cannot be re-threaded to fit any other size of plug made.—F. M. SERVICE.



New Ford Balks

To the Expert:

Please answer me the following questions: Which is the best way to re-charge a Fordson magneto, without dismantling? Why does a Ford 1922 model not run as good on battery as on magneto? What makes nine out of ten new Fords knock when pulling hard on high gear? When carbon is scraped it stops for a while, altho there is very little carbon in the combustion chamber. Bearings and pistons are all O. K.

Which is the quickest and best way of telling when the oil pipe is clogged on a Ford car without taking down motor?

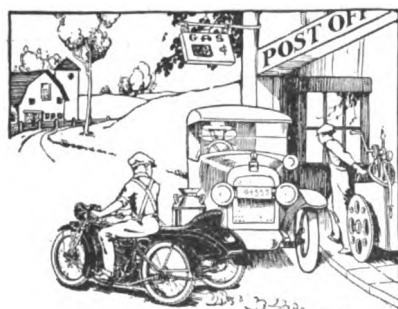
What makes my new 1922 Ford start hard? Everything seems to be O. K. Runs fine after started. Car is equipped with starter and run only about 200 miles. It starts fairly well when cold if I pour warm oil in spark plug holes but it has little effect when motor is warm. Why should this be? I have had this car thoroly inspected and was reported O. K. Surely something is wrong. Could the trouble possibly be in the carburetor?—BEN KRELLNER, St. Marys, Pa.

Answer—There is only one real way to repair a Fordson magneto and that is to remove it and replace the worn parts. It is true that there are several devices on the market to do this work without dismantling the motor, but they have not met with any great degree of success.

Cut Down Your Automobile Upkeep

You wouldn't think of hitching up the span, to do an errand the buggy could do. Think of the many jobs around the farm you could do with an

Indian Motorcycle



An INDIAN Scout gives 60 to 75 miles per gallon, two small tires—all upkeep correspondingly low. No hill too steep, no road too narrow. It's light, low saddle position, easy to ride and handle, comfortable and safe.

Ask your dealer for free demonstration. Write us for our free illustrated Indian Farm Motorcycle Book. Address Dept. F.

HENDEE MANUFACTURING COMPANY
Largest Motorcycle Manufacturers in the World
Springfield, Mass. U. S. A.

Bates Steel Mole
The most efficient Tractor in America
Bates Machine & Tractor Co.
247 Jackson St., JOLIET, ILLINOIS

SAVE MONEY
WRITE FOR
FREE CATALOG
OF
AUTO SUPPLIES
MANY BARGAINS. POSTAGE PAID. Join Profit Sharing Club, no dues. Send for Membership Card.
HERMAN BUMILLER COMPANY
432F MAIN STREET CINCINNATI

1923 Model OTTAWA WONDERFUL NEW ENGINE 5 YEARS AHEAD
Get full particulars. Special Low Prices and FREE Book today!
OTTAWA MFG. CO.
3264 G. King St., Ottawa, Kans.
Desk 3264 G Magee Bldg., Pittsburgh, Pa.



WEBER'S BEST laying, BEST paying chickens, ducks, geese and turkeys. Fine pure-bred quality. Fowls, Eggs, Incubators all at cut prices. New Catalog and Breeders' Guide Free.
W. A. Weber, Box 65, Mankato, Minn.



Why Patch When a Shaler Vulcanizes?

Why take chances with cold patches when you can make a heat-vulcanized repair that will "stick"—even outlast the tube—in five minutes?

No tool-kit is complete without a Shaler 5-Minute Vulcanizer. It is a necessity and the greatest convenience ever offered to the motorist.

The Shaler 5-Minute Vulcanizer is easy to use—you need only a match. Always ready—never bothered by wind or storm. Cannot injure or burn the tube. No gasoline—no danger of fire. Get a Shaler 5-Minute Vulcanizer from your dealer. It will soon pay for itself by the saving in time, trouble and tire repair bills.

\$1.50 At All Auto Supply Stores

Slightly Higher in Canada and West of the Rockies

The outfit includes the vulcanizer, 12 Patch-&-Heat Units (6 round for punctures and 6 oblong for cuts)—ready to use—with complete instructions. Extra Patch-&-Heat Units 75c a dozen.

C. A. SHALER CO.

2267 Fourth Street Waupun, Wis.



WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

No Ford car will run as good on the battery as on the magneto, because the ignition system is designed to operate on an alternating current of 12 to 18 volts, while the batteries are direct current of only 6 volts.

A new car will knock under a pull because the motor is stiff and a very small amount of carbon will cause pre-ignition due to great amount of heat generated by a new stiff motor under a pull. After the motor has been broken in, it will not heat up under a load as quickly or as much and hence it takes quite a bit of carbon before its effect is noticeable.

Remove the crankcase lower door and turn the motor over rapidly by hand or with the starter. If the oil line is plugged there will be no oil thrown from the front end of the crankcase onto the floor.

The hard-starting of your car must be due to an imperfect timer, as there is nothing else that could be wrong with a new car when it will operate all right after it starts. We would suggest that you first remove the timer and clean it thoroly and oil it with a mixture of half kerosene and half lubricating oil. If this does not eliminate the trouble, replace the timer roller with a new one, as the spring may not be strong enough on the roller arm to bring it in hard contact with the points or the timer shell.—F. M. SERVICE.



Fordson to Haul Logs

To the Expert:

I am one of the subscribers of FARM MECHANICS and a Fordson owner. Will you please advise me by this department the best way to equip to haul heavy logs on the deep snow with Fordson?

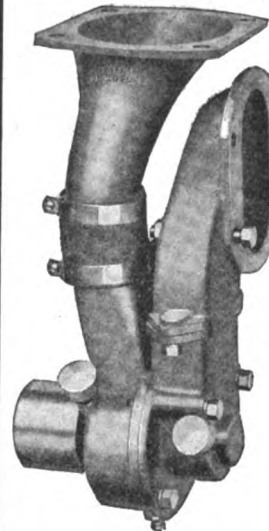
Shall I get crawler attachment like rigid rail track or grid iron wheel? Is there any better way to make more power for soft snow?—C. R. TATTENCHI, Cascade, Idaho.

Answer.—Either the rigid rail tracks, crawler equipment or the grid iron grip wheel would pull your Fordson equally well thru the heavy snow, but we would advise that you remove the front wheels and substitute sled runners for them. These should be about five feet long and have an 8-inch face or runner.

In building them they must be attached to the front axle spindles so that they will turn with the steering wheel, or, in

Radford's Cyclopedia of Farming is now ready. Read pages 19 to 26 of this issue of **Farm Mechanics**.

Here's the New MILWAUKEE CIRCULATING WATER PUMP FOR THE FORDSON TRACTOR

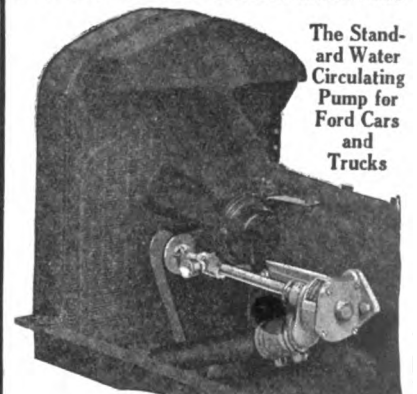


Guaranteed as efficient on the Fordson as our other Milwaukee pump has proven on Ford Cars and Trucks.

Years of experience in the manufacture of circulating pumps explains their superiority

**MILWAUKEE
CIRCULATING WATER PUMP
FOR FORD CARS AND TRUCKS**

for Ford Cars and Trucks



The Standard Water Circulating Pump for Ford Cars and Trucks

**Buy them of your
Jobber, Dealer
or Direct**

For Fordson - \$21.50
For Ford Cars - \$9.50

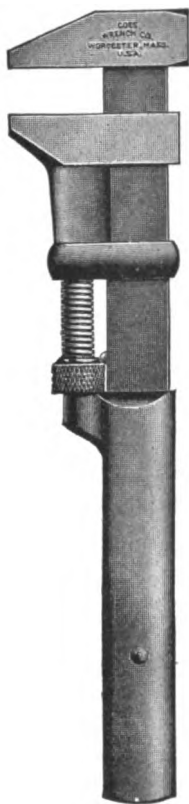
**Send for Descriptive
Literature**

Cramer Mfg. Co.

Dept. F

387-389 Tenth Street
Milwaukee Wisconsin

COES WRENCHES



On the modern farm where everything is being done by machinery, you will find that Coes Wrenches are helping to keep each and every machine in first class running order.

Coes Wrenches are built to give better service and last longer than any other wrench on the market.

*For sale by all good
dealers*

Coes Wrench Company

Worcester Massachusetts

other words, handle just the same so far as steering is concerned as the two wheels would. They must be made so that when on the tractor the same engine level will be maintained as with the wheels.

A tractor thus equipped has been used for some time by one of the large logging concerns and has met with considerable success.—F. M. SERVICE.



Ford Differential Worn

To the Expert:

Will you kindly give me a little advice on my Ford car?

When the machine is shifted from low to high speed a chattering or gripping sound is given out unless the motor is slowed down until the machine is in gear. When driving faster than 20 miles per hour a loud buzz or hum is noticeable in the transmission or differential, but is quiet when ascending a grade, being especially noisy on easy pulls down grade, etc.

Could the trouble in changing from low to high be in a loose universal, a worn main bearing, or a worn transmission?

I believe the trouble is largely in the universal, but I would like to have your advice on the matter. The motor has plenty of power, but does not get very good mileage, doing about 14 miles per gallon.—HAROLD REMER, East Lansing, Mich.

Answer—The trouble is in the differential and we would recommend that you have it overhauled before it breaks down. The buzzing is caused by the drive gear and pinion of the rear axle being badly worn, and the universal joint should be inspected when the axle is out. Trouble at this spot is only heard in a Ford car when you apply your brake as the car is being brought to a stop and the clutch is in neutral. It would also seem from your description that the clutch is slipping a little, and this can be adjusted by turning in the small split screws in the three clutch fingers which can be seen when the sloping door on the transmission case has been removed. The cotter pins are taken out and the screws turned just one-half of a turn in. Then the cotter pins replaced. All three of them can be gotten at by leaving the car in high speed and rolling it ahead on the floor until each one comes up.

If you are only getting 14 miles to the gallon we would advise that you purchase from your Ford dealer one of the new carburetors which will give from 20 to 25 miles to the gallon.—F. M. SERVICE.



Fordson on Thresher

To the Expert:

We have a Port Huron Thresher model A, 20x34, which has smooth grain pans

and when set according to the letter find it does not clear itself. It seems as tho the shape isn't right. Would a corrugated pan do any good? If so, how large should these corrugations be? Also we have been pulling this machine with a Fordson and find we haven't enough power.

We have been figuring on belting to Fordson to this machine, but are at a loss to know how we should do it. Could you furnish us with some ideas and suggestions? Would a jack shaft be practical? Could one run cylinder and the other the rest of the machinery?

Could you furnish details of a home-made burning-in stand for Fordsons and Ford engines? I have seen such a cut, but am unable to find any now.—QUASS Bros., Ashland, Neb.

Answer—We do not believe that the trouble you are having is caused by the thresher itself or any of its parts, but is due to the manner of operation and the amount of power and speed supplied. This thresher is of a well known and widely used make, and is operating successfully in large numbers in your territory. The question of power is probably the most important for you to solve, as a lack of power will result disastrously to the efficiency of the machine. This would mean that the cylinder speed will not be kept up and thus the cylinder cannot properly knock the kernels from the heads of grain. This will result in insufficient agitation of the straw and also the pans and would cause them to choke up. If you cannot feed the machine to its capacity and at the same time have it running at the speed recommended by the manufacturers, with one Fordson tractor, then there is something the matter with the tractor, and we would advise you having it gone over to see if anything is keeping it from developing its normal speed and power. This thresher is made to be operated by a Fordson and does not require more power than the Fordson can easily develop.

Regarding the use of two tractors coupled up to the one machine, this has been done with success, but requires the installation of an extra pulley on the thresher drive shaft. It would not be practical to hook up the two tractors separately to the cylinder end and auxiliary drives as you suggest, as the speeds would vary and this would change the uniform speed of the different parts, which would defeat the efficient operation of the machine.

To build a machine that would successfully burn in the crankshafts of Ford and Fordson motors would entail considerable expense and time. It is necessary to construct the machine with either two beds or two shafts with a special coupling

Make Your TRACTOR SELF-STOPPING

with the

Tractor Stop

PLOW HITCH

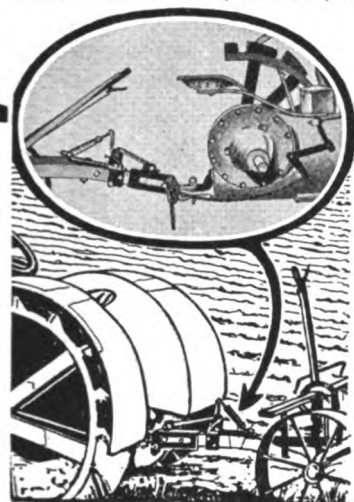
\$15.50

Write for literature and name of nearest dealer

Makes Plowing Safe and Easy

Dealers: This is a "red hot" Seller—Write for Discounts

MEILI-BLUMBERG CO., Dept. F M, New Holstein, Wis.



on each, as the Ford and Fordson crankshafts are of different sizes and different heights from the top of the cylinder block. It would be much more economical to purchase one already made by people who have the facilities for their manufacture.—F. M. SERVICE.



Ford Stalls

To the Expert:

I have a Ford model 1921 with self-starter that has not been run more than 150 miles, but when I go to back up with it and press on the reverse pedal the car starts back but the gears grind and will stall the engine. I think that it is not getting oil where it ought to. I keep the crank-case full of oil so that it runs out of the upper pet cock. I shall be very much obliged to have you tell me what is the matter with my car and how to fix it.—MILTON L. COLBY, Antrim, N. H.

Answer—The trouble you are having is not caused by a lack of oil any place because if this were the case you would have trouble when you went forward, too, as the oiling system lubricates both the motor and transmission and all their parts from the one supply of oil. Your difficulty is caused by a stiff reverse pedal shaft and notch, which sticks when the pedal is forced forward. This will in a short time correct itself as it wears in, but it can be helped along by removing the floor boards and oiling the reverse pedal where it enters the transmission case. If the pedal has a tendency to stay forward when you step on it, remove the transmission cover door and turn the adjusting nut on the reverse pedal to the right several turns. Care must be taken that this is not adjusted so tight that the band will drag on the reverse transmission drum, as it will act as a brake and cause the motor to heat up.—F. M. SERVICE.



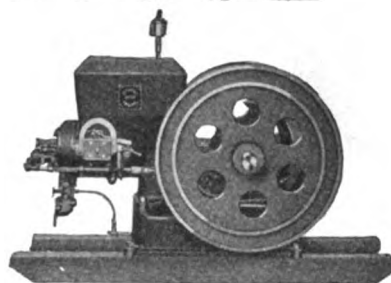
Noisy Brake Bands

To the Expert:

In your department for Fords, in an issue some time ago, a powder or something was suggested which one could use in Fords cars to eliminate the chatter of the bands. I have not been able to locate any at our towns around. Would you kindly send the name of the manufacturer?—VICTOR WIK, Millard, S. Dakota.

Answer—The powder you refer to is known as "motor mica" which can be obtained from many large automobile supply houses.—F. M. SERVICE.

STOVER



3 & 6 H.P. Type "K" Engines Are NOW Ready

Inspired by the success of our 1 1/2 H. P. Type "K" Engine—famous as "The Engine With 16 Distinctive Features"—we have just put into quantity production two more Stover Type "K" Engines—one of 3 H. P. and the other a 6 H. P. Size.

Some Outstanding Features

They possess all the qualities that made the the 1 1/2 H. P. popular—throttling governor for kerosene or gasoline, hit and miss for gasoline only, water-cooled cylinder head, removable die-cast bearings, shims for taking up wear, etc.

Write for FREE Booklet

Get our FREE Engine Booklet. Dealers everywhere are seeking representation for our engine line, thereby entrenching themselves as the leaders in their territory. Those who write us immediately may be able to secure dealerships in their vicinity.

Stover Manufacturing and Engine Co.

Also makers of Stover Samson Windmills, Kniflage Cutters, Commutators, Pump Jacks, Working Heads, Wood Saw Frames, Hot Galvanized Steel Fence Posts, Belted Electric Light Plants and Hardware Specialties.

1611 Lake St.

FREEPORT, ILL.



Permanent Products 100-Year Concrete Fence Posts

The only Concrete Post in the world into which you can drive staples. This patented stapling feature lasts forever.

The anchor at the base prevents heaving by frost. Fences made with our posts remain in perfect alignment.

Permanent Products 100 Year Posts are the most economical—they never split, burn, rot, rust or decay. Easily installed and last forever. We sell or rent mould equipment.

See page 133.

Permanent Products Company

15th Floor Marquette Bldg.
CHICAGO

WELL DRILLS

Big Pay Drilling Wells

Everybody uses water. The modern drilled well is the best source of a safe, sure and sanitary supply.

Our free **Drillers' Book** with catalog of Keystone Drills explains the business. Easy terms. Write now.

DEEP WELL PUMPS

Downie Deep Well Pumps for Farm Water Supply

give the highest efficiency and dependability.

Equipped with electric motor or belt-pulley for gas engine.

Ask for Catalog No. 6 and state your problem.

Keystone Driller Company
170 Broadway, New York, Massachussetts, Chicago, Wash., D. C.
Beaver Falls, Pa.

Permanent Products 100-Year Concrete Fence Posts

The only Concrete Post in the world into which you can drive staples. This patented stapling feature lasts forever.

The anchor at the base prevents heaving by frost. Fences made with our posts remain in perfect alignment.

Permanent Products 100 Year Posts are the most economical—they never split, burn, rot, rust or decay. Easily installed and last forever. We sell or rent mould equipment.

See page 133.

Permanent Products Company

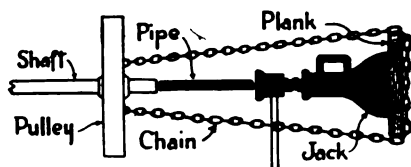
15th Floor Marquette Bldg.
CHICAGO

HANDY ANDY'S DEPARTMENT

WHERE FARM MECHANICS READERS CAN PASS ALONG GOOD, TESTED IDEAS.

To Remove Pulley Wheel

A GREAT many readers of Handy Andy probably have had the same trouble I have in removing a flywheel or pulley from a shaft. Here is a method I use. I secure a strong piece



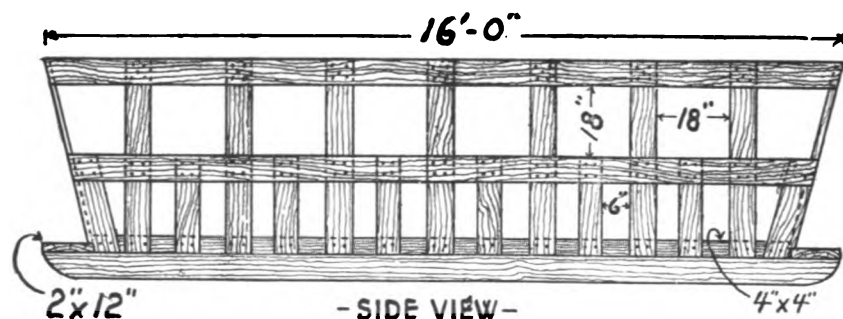
Device for Removing a Pulley Wheel.

of wood for the back of a common jack. Then I pass a chain thru the wheel and around the wood base of the jack. A piece of iron or steel the size of the pulley shaft is placed between the end of the shaft and the jack. By operating the jack the wheel is drawn off without a great deal of effort. I have used this method many times and always have found it successful.—J. K. PRICE.



Handy Feed Rack

HERE is a sketch of a handy feed rack I have used on my farm for two years for feeding both cattle and smaller animals. The advantages of it



are that it can be hauled by a light team to the hay or straw stack to be filled and that it can be used any place in the yard for the cattle. The large openings in the upper part allow the cattle to reach well to the center of the rack without wasting feed. It also keeps them from fighting the smaller animals away. A team can be hitched to either end of the rack. I have used mine for two years and have never had to renail a board. If this appeals to

\$1 for an Idea

I, Handy Andy, am famous, because I am found on nearly every farm. When some little thing that would make farm work easier pops into my head I get to work and build it. Farm Mechanics has asked me to pass my ideas along, so as to help everyone do things more easily. I want to pass your ideas along, too. Send them to me, using not more than 200 words, and a pencil sketch or photograph to illustrate it. I will send you \$1 for every idea accepted. Address your letter to me.

HANDY ANDY,
Care Farm Mechanics,
1827 Prairie Ave., Chicago.

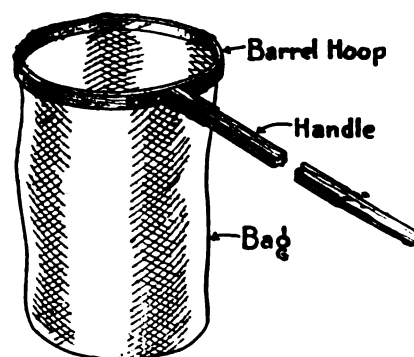
you pass it on. FARM MECHANICS is all right.—PAUL MAMAGE, New Rockford, N. D.



Easy Way to Catch Chickens

WHO has not seen the farmer, the wife, the hired man, and most all the children engaged in the exciting

chase for the chicken, which is to be served for the Sunday dinner. All around the yard, over the fence, thru the garden, into the barn loft, and out to the thicket in the corner of the field until someone luckily falls upon it. An easier way is to make a long handled net, using a sound, well-made barrel hoop. An old hammock makes a fine



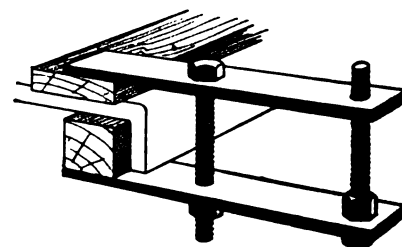
Net for Catching Chickens.

net for this purpose. I made the net about two feet long. Lay it down. mouth up, put a few grains of corn on top, pretend you are looking the other way, and when a chicken steps on the net to pick up the corn, lift it suddenly, tip it slightly to one side, and you have the fowl safe. If you will try to learn you can soon drop the net down over any desired bird in a bunch.—R. B. RUSHING, Simpson, Ill.

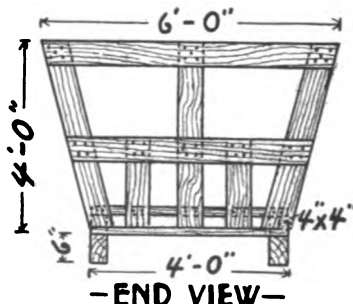


Handy Clamp

QUITE often one wants a wide opening clamp for holding some special piece of work. To fill this need I often use the clamp shown in the accompanying sketch. It is easily made and answers most requirements. The



A Simple Clamp of Two Pieces of Iron and Two Bolts.



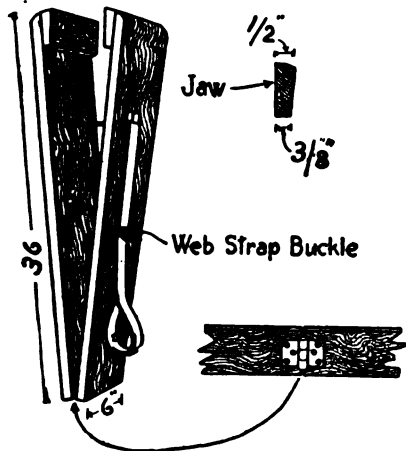
—END VIEW—
Two Views of Handy Feed Rack.

clamp is made of two pieces of flat bar iron and two ordinary bolts. The irons are placed on either side of what is to be clamped and the bolts drawn up by tightening the nuts. This clamp will be found useful in a lot of places where the ordinary clamps cannot be used, as it takes but little room.—**CHARLES H. WILLEY**, West Concord, N. H.



Leather Vise

A SERVICEABLE vise for the farmer who repairs his own harness and does other work with leather is shown in the illustration. Two heavy



Leather Vise of Two Boards and a Strap.

pieces of board are hinged together at one end. At the other cleats of either hardwood or iron are attached for the jaws. A leather strap attached to one piece is run thru a hole in the other and brought down along it and thru a clip to hold it in place. At the end of the strap there is a loop for the operator's foot. This is a simple device but one which will hold straps while they are being sewed so that the worker will not have trouble with it slipping.—**MARCUS TORGESON**, Mason City, Ia.



A Feed Box on Hay Rack

BY extending the bed pieces of the hay rack out two feet at the rear, when it is being built, a good grain feed box can be made for giving the team grain along with hay at meal time, when occasional demands.

We used to feed a large number of

Take No Chances.

Read pages 19 to 26 of this issue of **Farm Mechanics**.



Myers Mower for the Fordson

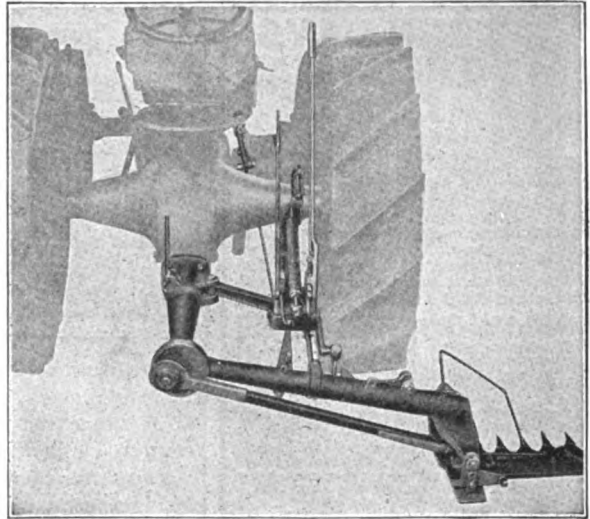
Built in One Unit

Easily and quickly attached or detached in **ONE UNIT** by four bolts on the Fordson same as plow or disk harrow.

Attached to rear axle housing, which is built especially heavy, and designed to pull loads. No strain on crank case or other light parts of tractor.

No interference with the accessibility of the Fordson for adjustment or repairs.

Cutter bar in full view of operator **WITHOUT** turning around. Cuts square corners without backing or circling. Sickle runs at wheel speed and guards have **DOUBLE** wings, making it easy to keep tight and true. Cutter bar is six foot with reinforced back. furnished.



Knives are interchangeable with Deering or Deere. Two sickles

Automatic Safety Device—

releases clutch of tractor and brings machine to stop upon hitting obstacle of damaging size before damage occurs. It is not necessary

for operator to leave seat to replace pins or adjust bar after striking obstacle. Send for our special circular on the Taco Myers Sickle.

TRACTOR APPLIANCE CO.

211 Monroe Street

New Holstein, Wis.



How much progress would a railroad train make without the track it runs on?

How much more progress will your tractor make, supplied with wheels scientifically constructed to serve as a track?

A positive 35% increase in traction will be the first benefit you will experience with **GRID IRON GRIPS**. Then—more work from the tractor, longer life and higher operating efficiency will be yours.

Made in sizes designed for Fordson, Samson, Case, Wallis, International Heider, Moline, Huber, Hart-Parr, Allis-Chalmers, Rumley, Avery, Waterloo-Boy, Twin City, E-B, Lauson, LaCrosse.



THE GRID IRON GRIP WHEEL CO. TOLEDO, OHIO

NEW KEROSENE LIGHT BURNS

94% AIR

Beats Gas or Electricity

TEN DAYS' FREE TRIAL

Over 3,000,000 Satisfied Users

Make your home bright and cheerful, saving one-half on oil. Scientific tests prove this wonderful new Aladdin five times as efficient as the best round wick open flame lamps. Sixty candle power pure white light for 50 hours on a gallon of common kerosene. No odor, smoke, noise or pumping up. Won't explode. Guaranteed. Prove to yourself by free trial that Aladdin has no equal as a white light. If not satisfied return at our expense.

Get Yours Free We want one user in each locality to whom customers can be referred. In that way you may get your own without cost. Be the fortunate one to write first for 10 day free trial offer and learn how to get one free.

\$1,000 REWARD Will be given to anyone showing us an oil lamp equal to this Aladdin in every way. (Full details of offer given in circulars.)

Agents Wanted To demonstrate the Aladdin in territory where oil lamps are used. Experience or capital unnecessary. Many agents average five lamps a day and make \$500 a month. Write quick for territory and samples.

THE MANTLE LAMP COMPANY OF AMERICA
390 Aladdin Bldg., 609 W. Lake St., Chicago, U. S. A.

**ALWAYS A BETTER TIMER NOW
BETTER THAN EVER
FOR FORD CARS AND TRACTORS**

**THE NELSON BALL BEARING
TIMER BUILT FOR SERVICE**

**WRITE FOR DEALERS PROPOSITION
NELSON TIMER COMPANY
610 E. Water Street MILWAUKEE, WIS.**



Price for Ford or Fordson Tractor **\$3.50**
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INVENTORS Desiring to secure patent should write for our book, "How To Get Your Patent." Send model or sketch of invention for opinion of patentable nature.

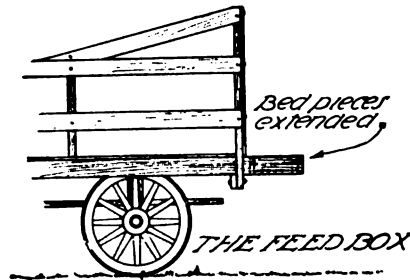
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stock the year around on a hill ranch. This called for much hay hauling. Since the hauls were sometimes long enough to take a day the driver took his lunch and grain for the team at noon.

With the arrangement shown and by tying the team at the rear of the rack



Feed Box on Rear End of Wagon.

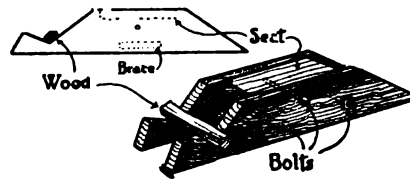
at mealtime the horses were about as comfortable as tho in their own stall.

This little compartment will come in handy a great many times for carrying the water jug, tools and provisions. It also aids one when climbing the load from the rear. The two-inch partitions with two-inch plank nailed on the bottom, is all that is required.—D. R. V. H.



Safe Chopping Block

CHOPPING wood into short lengths often results in injury to the chopper. The drawing shows a device that is comparatively safe. When the wood



Chopping Block That Saves Accidents.

is broken the pieces are thrown away from the person doing the chopping. The drawing shows how the block is constructed. Heavy pieces of hardwood should be used for the side pieces and the brace. It can be made any size the maker desires. I have a seat, as shown in the drawing, on mine and find that I can cut up kindling without tiring.—L. J. SEIDL, Pisek, N. D.



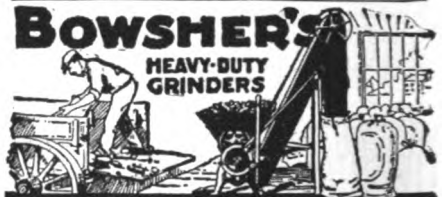
Milk Can Stabilizer

MANY farmers cool the milk by placing the cans in a water tank. As the height of the water in the tank and the milk in the cans varies, there often is trouble. The sketch gives an idea of how a stabilizer to prevent the can from tipping is built. The parts needed are two screw-eyes, two small

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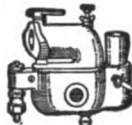
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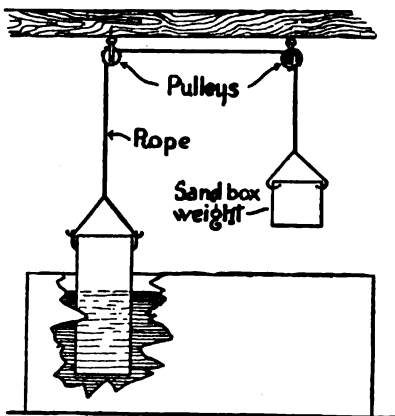
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pulleys and a small box. The screws are turned into the beam above the tank. From these the pulleys are suspended and the ropes run thru them. Two hooks to catch under the top of the can are attached to one end of the rope. At the other end the box, filled



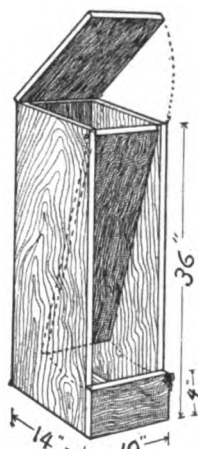
Stabilizer to Hold the Milk Cans Upright.

with the right amount of sand, is fastened. It is an easy matter with this device to hold the cans at the right height without tipping.—VICTOR FINK, Brownsville, Wis.



Hopper for Loose Salt

SHOWN in the illustration is a box for loose salt that is very convenient and satisfactory, as it prevents waste. The box is made of inch boards. It is three feet high, ten inches wide and fourteen inches from the front to the back. The front piece is hung at the top so as to swing in, allowing the stock to lick the salt that is at the bottom. The swinging door is four inches short, leaving a space at the bottom so that the animals may know what is in the box until they become accustomed to using it, which they do in a short time. A piece is nailed across the bottom so as to prevent the stock from nosing out the salt. The box is filled from the top, the cover being hinged. This box will prevent the salt from getting wet by rain and save it from being wasted.—J. P. VOLDEN, Coon Valley, Wis.



Hopper for Loose Salt.

know what is in the box until they become accustomed to using it, which they do in a short time. A piece is nailed across the bottom so as to prevent the stock from nosing out the salt. The box is filled from the top, the cover being hinged. This box will prevent the salt from getting wet by rain and save it from being wasted.—J. P. VOLDEN, Coon Valley, Wis.

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Distillate in Fordson

To the Expert:

Will you please answer the following questions for me? I have a Fordson tractor and I want to burn distillate instead of kerosene, as it is cheaper here and it will give me more power, I think. What position will the shunt valve have to be set, off, on, or mid-way to burn distillate?

I have a magneto on my Fordson but is still hard to start, and I have to spin it. That is almost impossible on a cold morning. Is it possible to hook up my car battery or a set of dry batteries to the tractor without injuring the magneto in any way? If so, will you please explain how it can be done?—**W. J. HATCH**, Morgan Hill, Calif.

Answer—Distillate is being used in tractors with great success in many

parts of the country, but as the grade of the product varies it is impossible to tell you exactly where to adjust your carburetor or shunt valve.

Fill up your fuel tank and start the tractor, allowing it to run until it has become hot. Then open up the needle valve on the carburetor two and one-half turns, and place the shunt valve at the on position. After the tractor has run for a few minutes, cut down the flow of distillate by turning the needle valve down to the right until the motor starts to misfire. Then gradually increase the fuel supply by opening the needle valve until the motor has reached its highest speed and no smoke comes from the exhaust. This usually takes half a turn. Now turn the shunt valve a notch toward the off position and observe the results.

If the motor does not drop in speed and no smoke comes from the exhaust pipe, try it another notch toward the off position. Keep on trying it until the place is reached where the best results are obtained. The shunt valve should always be in the notch where the fuel and air passing thru the vapor tube are best vaporized. If too much heat is allowed to strike this tube it will burn it out and if too little the fuel will not be properly vaporized.

There is no way in which you can hook up batteries to your magneto. If you are having trouble in starting it is probably due to poor compression or the choke valve is not closing properly.—**F. M. SERVICE.**



Ford Coil on Magneto

To the Expert:

I have a Bull tractor which is equipped with a high-tension magneto. The condenser has burned out a couple of times and as it is expensive to repair it, I was wondering if the low tension part which is in good condition could not be connected up with a Ford coil and used as a low tension magneto. If this is possible please tell me how to wire the two together.—**C. D. McCOWEN**, Wayside, Neb.

Answer—It would not be possible to get good results by connecting up a Ford coil to your magneto, as the Ford coil is of the vibrating type while the coil is non-vibrating. The points of the Ford coil would have to vibrate for all cylinders which would burn them away very rapidly.

The breaker points on your magneto also break too quickly to allow the Ford coil to operate as it should, for it requires a contact and current much longer to furnish an efficient spark than the kind of coil in the magneto.—**F. M. SERVICE.**

Pruning Young Fruit Trees

THE first five or six years are as important in the life of a fruit tree as they are in the life of a boy or girl. These are the years when emphasis must be placed upon training. The proverb "As the twig is bent so is the tree inclined" is just as true today as it was 75 years ago. If foresight is used in the early training of fruit trees it will not be necessary to remove large branches when the tree reaches bearing age and there will be no weak crotches to split and break off.

For the first five or six years attention should be given to removing the crossed branches as well as other twigs that tend to grow where they will interfere with the principal branches. When two branches of equal size emerge from a common place forming a sharp "V" a weak crotch results. To overcome this tendency either one of the branches should be removed entirely or if both branches are needed they are pruned unequally, the larger branch becoming the leader and the shorter a side branch.

The first two or three years the leading branches should be headed back to about one-half the previous season's growth. After this heading-in should be avoided if possible or at least reduced in amount. The trees will be induced to fruit at an earlier age and they will attain a larger size if the pruning is reduced to a minimum the fourth, fifth and sixth years. At this time it is also advisable to leave many of the young spurs that start from the large branches or clip back the side branches to a single bud to induce the formation of fruit spurs. In general, severe pruning induces vegetative growth and rank growth retards fruit bud formation.



CEREALS are the simplest, easiest to get and cheapest foods we have. Make their use a serial.



DOESN'T the candle fit the stick? Then dip the end into hot water. It will become soft and may be molded to fit.



THE city worker may get more money than the farm-hand; but he also spends more.



WHEN all is said and done, increased production of high-grade products is the surest way to farm profits.



GOOD clover seed costs fifty cents to a dollar more a bushel than does poor stuff, but it's worth a lot more.

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NOTICE TO ADVERTISERS

Forms for the March number of Farm Mechanics will close promptly February 15. New Copy, changes and orders for omissions of advertisements must reach our business office, 1827 Prairie Ave., Chicago, not later than the above date. If new copy is not received by the 15th of the month preceding date of publication the publishers reserve the right to repeat last advertisement on all unexpired contracts.

FARM MECHANICS.

Pulley for Twenty-six Inch Saw

To the Expert:

As a reader of FARM MECHANICS I wish you would please tell me the rule to figure the speed of line shafts and belting on to different machines of different speeds when you know the speed and size of drive pulley.

What size pulley should I have on my 26-inch buzz saw for sawing cordwood, to be driven by a Fordson tractor, speed 1,000, diameter of pulley 9 1/2 inches?—HAROLD McVEAY, Akron, N. Y.

Answer—To find the speed of a driven pulley when the size of it and

the size and speed of the driving pulley are known, multiply the diameter of the driving pulley by its speed and divide by the diameter of the driven pulley.

To find the size of the driven pulley when its speed and the size and speed of the driving pulley are known, multiply the diameter of the driving pulley by its speed and divide by the speed of the driven pulley.

If your saw is to travel 1,000 r. p. m. there should be a 9 1/2-inch pulley on both the saw shaft and the Fordson, as the correct engine speed of the Fordson is 1,000 r. p. m. and the pulley travels at the same speed as the crankshaft.—F. M. SERVICE.

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It is All Steel throughout. Steel racks to carry the buckets. Steel head section. Steel boot. Welded steel buckets. No wood parts whatever. An All-Steel Bucket Elevator—PLUS the advantage that it is CHAINLESS. This CHAINLESS feature practically does away with all repairs—eliminates trouble. There is

Only 1 Shaft—2 Sprockets and 2 Bearings

In fact, in the All-Steel CHAINLESS Bucket Elevator there are only half the moving parts of other inside elevators. And everyone knows that the fewer parts you have on any machine the less trouble you have.

Most elevators have from 3 to 5 shafts above the boot, which means from 6 to 10 bearings and 8 to 12 sprockets. While on the All-Steel CHAINLESS Bucket Elevator there is only 1 shaft, 2 sprockets and 2 bearings, and these are in the boot—within six inches of the floor of your crib.

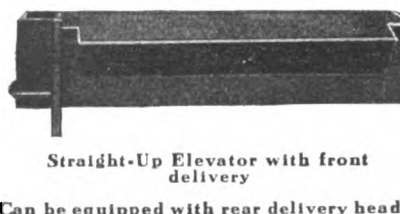
Other superiorities are: Less draft; roller bearing construction; elimination of rats in the corn; $\frac{1}{4}$ -inch boiler steel for the boot and head section; capacity not diminished, although less power is required; takes up less space in the crib; only small cupola necessary.

Investigate!—Write Today

There is every reason in the world why the thinking, business-like farmer will want this elevator installed in his crib. It means satisfaction. It means longer life. It means that the purchaser of this elevator will never need to buy another.

All these advantages are offered you in the All-Steel CHAINLESS Bucket Elevator at a price no more than the others. Write today—NOW—for full particulars, descriptive circulars, prices, and name of nearest dealer.

Portable Elevator Mfg. Co.
868 McClun St. Bloomington, Ill.



Straight-Up Elevator with front delivery

Can be equipped with rear delivery head



Whoa!

Affable Clergyman (pinching a little boy's bare leg)—Who's got nice, round, chubby legs?

Little Boy—Mamma.



A Husband's Privilege

"The cook is leaving us to get married."

"Good! She'll soon know from somebody who won't be afraid to tell her how punk her cooking really is."—Ex.



Creative Genius

Lady—What, in your opinion, is your finest piece of fiction?

Author—My last income tax return.—*London Opinion.*



Dark Evidence

Mother—Son, I don't believe you washed your face at all.

Small Son—If you don't believe me, look at the towel.—*Judge.*



Catty

"Why do all the men want to kiss me?" simpered the giddy girl.

"Oh, men follow the line of least resistance," spoke up her chum.—*Louisville Courier-Journal.*



It Needs Regilding Every So Often

"Why don't you marry Isabelle? She's pretty as a picture."

"Yes, but the frame is too expensive."



What Would We Do Without Him?

Be grateful to the man who saves
For he it is who lends

In times of need the money that
The other fellow spends.



New Memory System

"How is it you have such a good memory, Norah?" her mistress inquired.

"Well, mum, I'll tell ye. Since me childhood never a lie have I told, and when ye don't have to be taxin' yer memory to be rememberin' what ye told this one or that, or how ye explained this or that, shure ye don't overwork it an' it lasts ye, good as new, till ye die."—*Christian Advocate.*

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MARCH
1923

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MECHANICS

TITLE REGISTERED, U. S. PATENT OFFICE

A Monthly Magazine Featuring Farm Improvements, Machinery,
Equipment, Farm Buildings—For The Farmer and Dealer

1785
9

PABST STOCK FARM

*Headquarters For Pure-
Bred Holstein-Friesians*

I personally invite the readers of Farm Mechanics
to write me regarding pure-bred Holstein-Frie-
sians and to visit Pabst Stock Farm when in
need of a foundation herd, or of individuals of
outstanding merit.

J. M. Pabst.

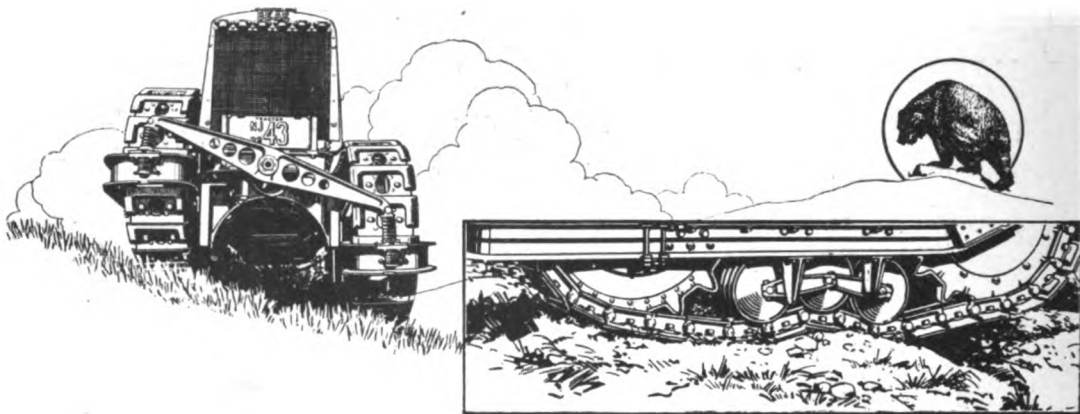
Oconomowoc Wis.



Creator

King Segis Alcartra Prilly

The Bear Tractor



Flexibility

THERE are few jobs in any class of tractor work where the unusual *flexibility* of the Bear is not of marked advantage. And this feature alone is frequently a big factor in making the Bear the first choice among tractors of comparable sizes.

When you observe that the oscillating bar on the Bear Tractor permits the front of the track on either side to rise 16 inches above the level of the ground opposite, you take the first measure of the Bear *flexibility*.

Then when you observe further, and note the action of the Bear track and track roller system, you come to a *full realization* that here is a tractor with *flexibility unparalleled*.

The Bear, as no other tractor, conforms to the contour of road, trail and field. As a result of both the extreme oscillation and minute compensation of the track, it climbs over obstructions and literally crawls in and out of depressions. It possesses greater mobility and greater traction than ever before attained in a tractor.

The flexibility of the Bear has still another advantage—it reduces the shocks that tractors of more rigid construction must suffer.

Flexibility is but one of the many features that distinguish the Bear from other tractors—that make it the most talked of tractor today.

Some of the other features are: Reserve Power—100% overload capacity for emergency. Weight—2 tons lighter than competing tractors. Compactness—6 feet turning radius. Lubrication—once-a-month oiling. Mechanical Efficiency—80% of the engine's power delivered to the drawbar. Track Roller System—rollers force track to grip ground throughout full length. Track—upkeep lowest on record. Track Adjustor—self-aligning. Drawbar—resilient; whiffletree hitch. Bearings—36 annular ball bearings. Control—automobile-type. Seat—spring-cushioned; upholstered. Engine—heavy-duty; 70 h.p. at 1200 r.p.m.

Bear Design, Bear Quality, Bear Craftsmanship mean this to the user: *Lower cost per unit of work done*—more economical performance.

Every tractor user, dealer and distributor should send at once for copy of the catalog.

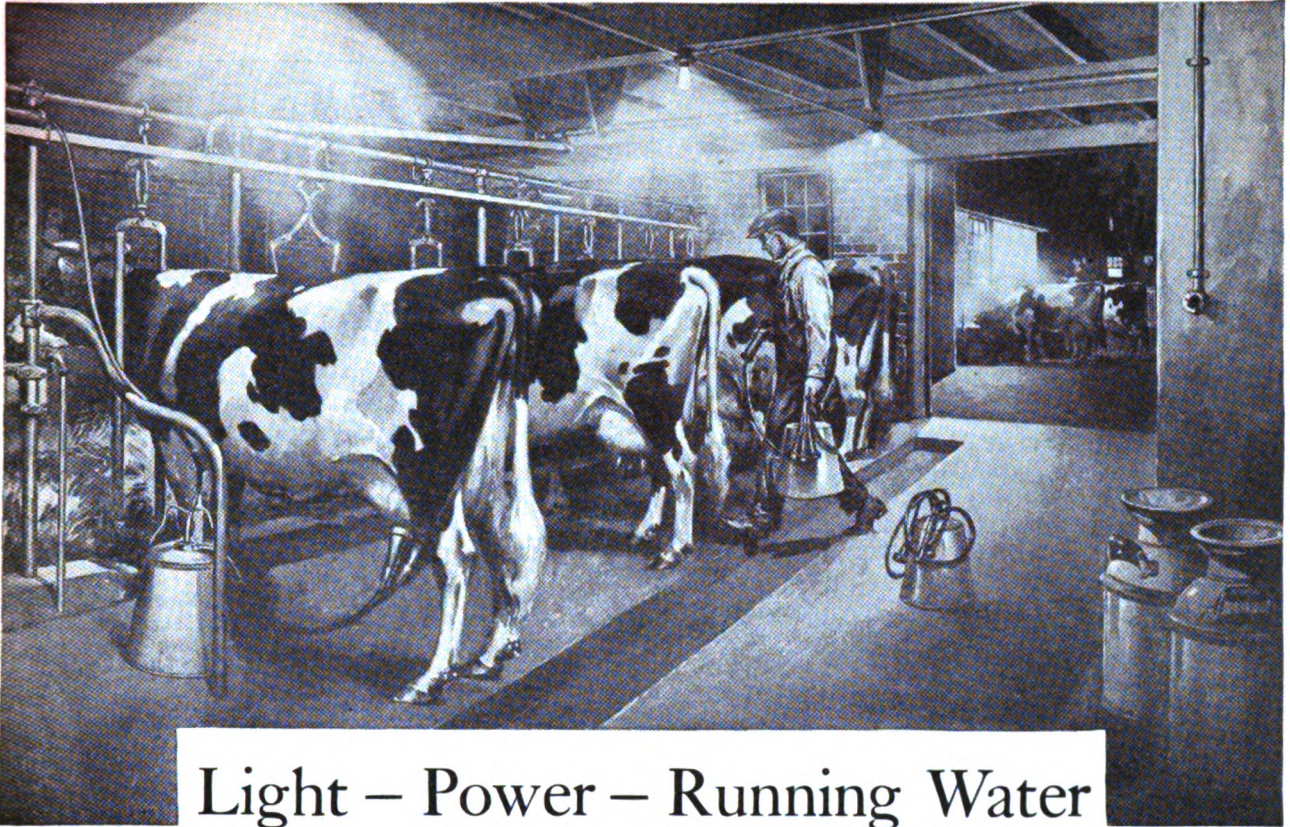
Distributors and dealers are invited to ask regarding open territory.

Franchises are being let rapidly.

25-35 \$4250

BEAR TRACTORS INC. 5314 PARK PLACE NEW YORK CITY

The Tractor that Delivers its Power to the Drawbar



Light — Power — Running Water

Think how much more efficiently you could work, how much better off your stock would be, and how much safer you would feel about your property, if you had the Kohler Automatic to furnish electric power and light!

This tested unit's 1500 watt capacity is twice that of ordinary plants. Overloading can't injure the Kohler Automatic for it has *no storage batteries* (except a small, automobile-type starting battery).

Its 110 volt current (city standard) uses standard appliances—a great

economy and convenience. You can carry this powerful current a thousand feet and more beyond the farthest range of low-voltage current.

It operates automatically for power as well as light. All you do is turn a switch *where you are*, without visiting the plant.

A wonderfully reliable, economical four-cylinder engine; fine materials and workmanship—a unit to serve you faithfully for years. . . . But get the whole story by writing for Kohler Automatic Booklet No. 87, for name of nearest Kohler dealer, and details of convenient payment plan.

KOHLER OF KOHLER

Kohler Co., Founded 1873, Kohler, Wis. Shipping Point, Sheboygan, Wis.

ATLANTA
BOSTON
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McCormick Bldg.

DETROIT
HOUSTON
INDIANAPOLIS
KANSAS CITY

MINNEAPOLIS
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NEW YORK
20 W. 46th St.

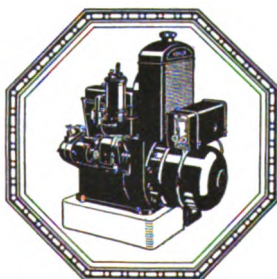
OMAHA
PHILADELPHIA
PITTSBURGH
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SEATTLE
LONDON

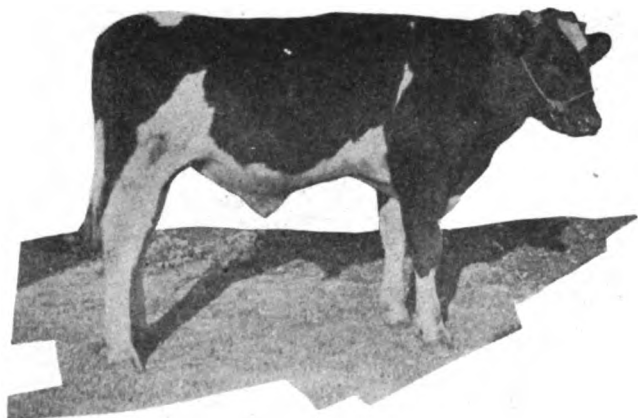
MANUFACTURERS OF KOHLER ENAMELED PLUMBING WARE

KOHLER AUTOMATIC POWER & LIGHT

110 VOLT



D. C.



PABST CREATOR MATADOR SEGIS, ear tag 566, born March 2, 1922. His dam is a 25-lb. four year old daughter of Matador Segis Walker now on year test. His sire is a Creator. He is a handsome young bull. Price \$350.00.

CREATOR IS the sire of 9 two-year olds from 20-lbs. to 26-lbs. of butter in seven days. His first yearly record daughter has just finished with 955.7-lbs. of butter and 20,649.6-lbs. of milk at the age of 1 year, 11 months, 18 days.

The Following Are the Oldest Sons Of Creator We Have Left


Ear tag 565, born February 27, 1922. Dam, a 25-lb. four year old daughter of King Pontiac Champion and a full sister to Pabst Goldenrod who has 37-lbs. of butter in seven days and 1139-lbs. for the year. The young bull is more white than black, is straight, deep and growthy. Price \$300.00.

Ear tag 569, born March 9, 1922. Dam, an almost 27-lb. daughter of a 39-lb. bull whose dam also has 1043-lbs. of butter for the year and whose full sister is a 37-lb. cow with over 1000-lbs. of butter in 365 days. He is an absolutely straight calf, nicely marked, more white than black. Price \$350.00.

PABST STOCK FARM

OCONOMOWOC, WISCONSIN

Herd Under Federal Supervision Last Test 100% Clean



LINCOLN-LIGHT

Electricity for the Farm

It Makes an Instant Appeal
by its
SIMPLICITY and DURABILITY

Only 3 Moving Parts. 1250-watt Generator. 5-year Guaranteed Battery Power Pulley.

Exclusive sales franchise still available in many good territories. Liberal proposition to Live Dealers.

Lincoln Light Corporation
Manufacturers
GRAFTON, WIS.



WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

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Title Registered in U. S. Patent Office.

FARM MECHANICS

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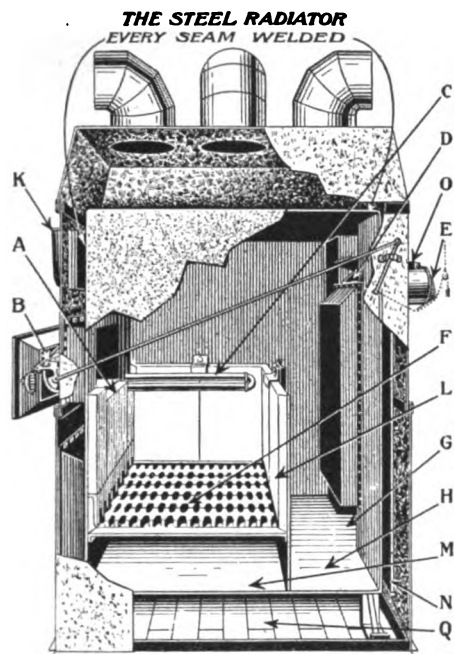
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Hess Welded Steel Furnaces

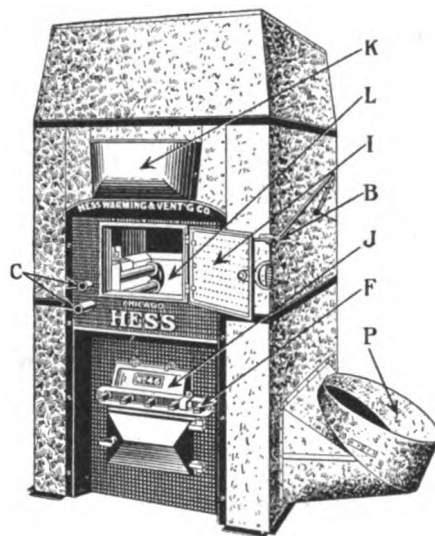
PIPE AND PIPELESS

Never were so many good features combined in any furnace, to result in economy and cleanliness, durability and efficiency.



- A. The low fire door, thirty inches from the floor—no high lifting of fuel.
- B. Automatic action between fire door, direct draft and check draft. When you open the fire door, the direct damper opens and the check draft closes. This prevents outpouring of smoke into the cellar when you feed the fire.
- C. Convenient and efficient water coil, for constant supply of hot water.
- D. Direct draft outlet in most effective position, operating with the fire door or independently.
- E. Air-check draft—chain-operated from floor above.
- F. Large grate area with separate grate bars—suitable for any kind of fuel—fine mesh for slack or lignite—coarser for hard or soft coal or coke—a solid plate covers them for burning wood.
- G. Smoke outlet at bottom of a large settling chamber. Hot smoke rises; the cooler portions are heavier and drop. We remove the smoke, while retaining and preventing loss of heat.
- H. A smooth floor at the bottom of settling chamber. Soot and ashes cannot lodge elsewhere and the heating surfaces remain clean. No flues to clog.
- I. Fire door plate perforated—to spray fresh air over the fire—

- J. Damper lift door—operating with chain from floor above. Regulates draft perfectly.
- K. Large water pan—where the water heats and evaporates rapidly, maintaining proper humidity.
- L. Thick fire brick lining; retains proper heat for combustion of cheap fuels. Installed and repaired through the fire door—no dismantling of pipes and furnace to repair a HESS.
- M. Large smooth rectangular ashpit. Close to the front and easily cleaned.
- N. Secondary casing next to the outer galvanized casing—prevents loss of heat in cellar.
- O. Smoke pipe outlet—straight and direct. No return flues to clog.
- P. Air supply collar—may be on either or on both sides of the heater.
- Q. Six inch air space under entire furnace. This means equal distribution of air for all pipes.



Last and Greatest of All. Every seam in the steel body enclosing the fire and ash pit is *riveted* and *welded*. It is gas and smoke tight, *absolutely*—and guaranteed to remain so *as long as the furnace shall stand*.

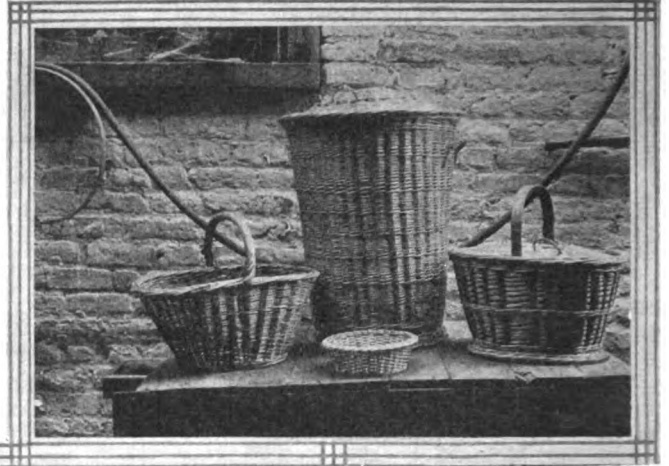
Write for illustrated book on heating and send in your sketches on our free plan and estimating service.

Hess Warming & Ventilating Co.

1229 R, Tacoma Bldg., Chicago

MEN WANTED

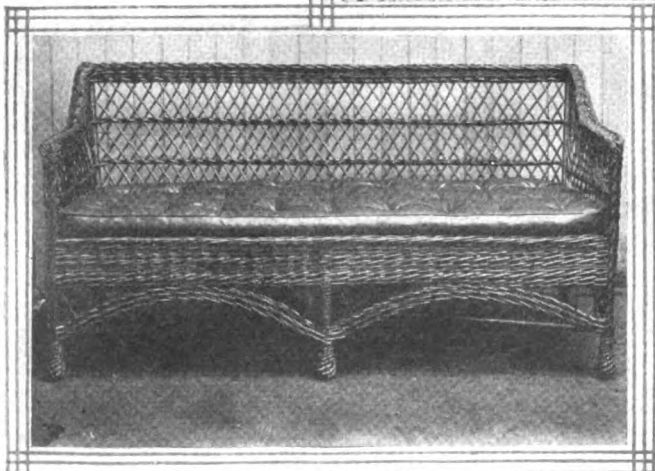
Efficient salesmen to manage branch sales and distributing offices we shall open May 1st in various large cities. Salary and profit sharing. Steady employment. No capital required; only experience, brains and energy.



GROWING WILLOW SHOOTS for the Manufacturers of Furniture and Baskets is a Business in Some Sections of the Country that Might be Termed "Farming." The pictures of this page show some of the operations of growing and preparing the willows for market and the completed articles that are made of the willow.



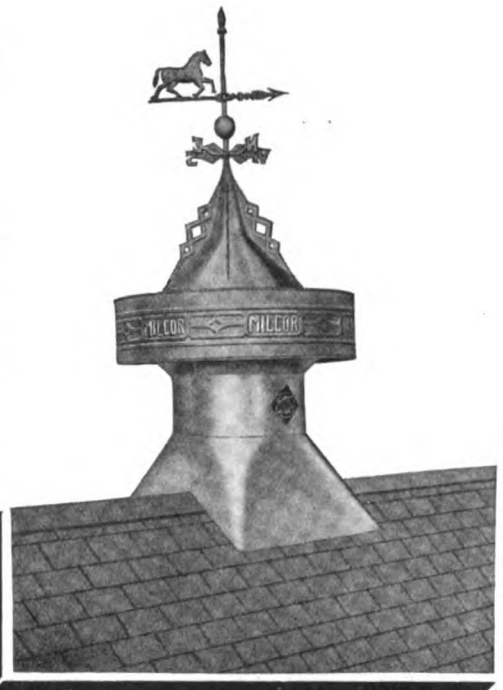
CUTTING THE SHOOTS is What the Man is Shown Doing in the Picture at the Extreme Left at the Top. In the center the shoots are being cut ready for tying into bundles as shown at the right bottom. Good packing and cutting to the right lengths and grading for quality is a job that requires knowledge and experience.



Isn't Bossie Entitled to Clean, Fresh Air?

You know how depressing a stuffy, damp, musty room is to a human being. Well, dairy cattle have clearly demonstrated their responsiveness to proper living conditions. The cow who contentedly chews her cud in an atmosphere of cleanliness and easy breathing actually gives more milk than she does when pure air is not to be had.

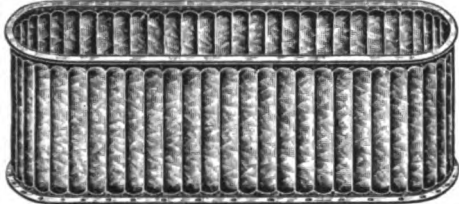
A dairy farmer who had just transferred a large herd of cows from a dark, musty barn to a light new ventilated one, said that it caused an increase of 200 pounds of milk daily almost from the start.



"MILCOR"

Complete Ventilating Systems

Other "Milcor" Specialties



Stock Tanks—All Sizes



Thermos Chicken Waterer

Height 18 inches, diameter 13 inches, capacity 3 gal.



One-Piece Hog Trough
Patented Aug. 17, 1920

Certainly Furnish the Fresh Air

"MILCOR" Ventilators, by the vacuum creating action of the outer air currents passing over and thru the wind band, forcibly draw the used air and gases away, the air space being then automatically filled by fresh air coming in at the intakes provided. The air in the barn is kept in circulation and dust, moisture and bad odors hoisted into outer space.

You Can Save Installing Cost

Blue prints of plans that we furnish free will make it easy for you to install a "MILCOR" Complete Ventilating System, if you want to do it yourself and save the price of installation. Or you can hire your local tinner or sheet metal contractor to do the work, thus saving transportation costs of factory employees.

If you would like our Illustrated Booklet, "Barn Ventilation Facts," tear off coupon and mail today.

MILWAUKEE CORRUGATING COMPANY

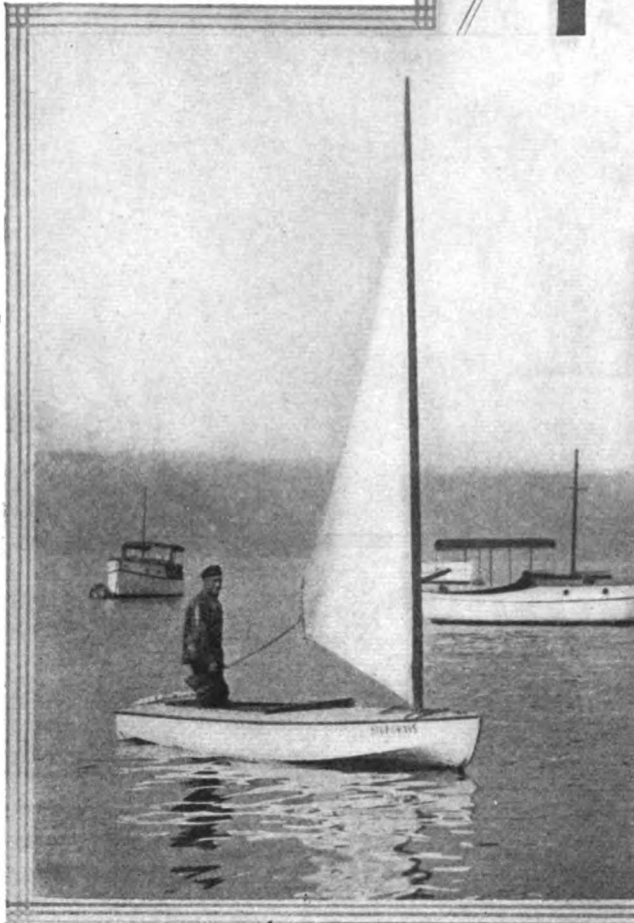
MILWAUKEE
KANSAS CITY MINNEAPOLIS

Also Manufacturers of
All Styles of Metal Roofing, Metal Shingles and Tiles
Metal Lath and Corner Beads, Window and Door Casings
Metal Barn Battens and Building Corners
Puttyless Hog House Windows

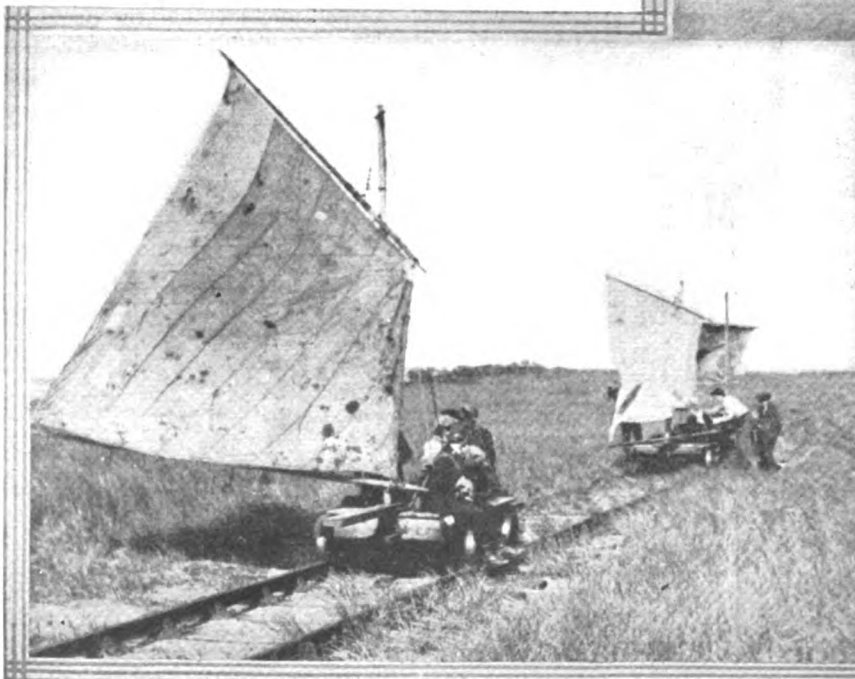


MILWAUKEE CORRUGATING COMPANY
Please send me free booklet, "Barn Ventilation Facts." Address _____
(Name) _____
(Town) _____
(State) _____

OCEAN-GOING SAIL BOAT. C. G. Hinton recently sailed this 16-foot boat on the Atlantic from Florida to New York.



SAILING O'ER THE BOUNDING RAILS. Coast guards along the Atlantic use this novel method to travel from place to place.



AERIAL POLICE. Out in Venice, Calif., the policemen travel by aeroplane, and woe be it to the offender who tries to escape.



HIGHEST AERIAL IN THE WORLD is that of the Radio Station on Mount Corcovado, Overlooking the City of Rio Janeiro.

Dependable DELCO-LIGHT

Now Within Your Easy Reach

Never before has it been made so easy for you to get Delco-Light.

It is now possible for you to obtain a Delco-Light plant to meet your requirements at the old 1917 prices.


You can buy it on easy terms.

You can get with it a set of high grade fixtures complete for five rooms and the porch for the astonishingly low price of \$12 f. o. b. Dayton.

And you can now secure the complete installation of a Delco-Light plant for much less than you imagine.

Your home, your farm needs Delco-Light. Your family want it—you have probably wanted it for some time.

Now you have an easy chance to get it. See your Delco-Light dealer today.



Special Delco-Light Set of High Quality Fixtures Complete

\$12

f. o. b. Dayton
Sold only with Delco-Light

These fixtures are made of heavy-gauge metal, brush and Flemish brass finish, wired and completely assembled ready for installation. It would be difficult for you to buy a set of equal quality at double this price

DELCO-LIGHT COMPANY, DAYTON, O.
Subsidiary of General Motors Corporation

Also makers of Delco-Light Water System, Delco-Light Washing Machine and Frigidaire, the Electric Refrigerator

These products made for 32 and 110 volt Direct or Alternating Current Service

25 styles and sizes from \$260 up~
This is one of the most popular models

at **\$335**

cash price
f.o.b. Dayton



Delco-Light Company, Dayton, O.

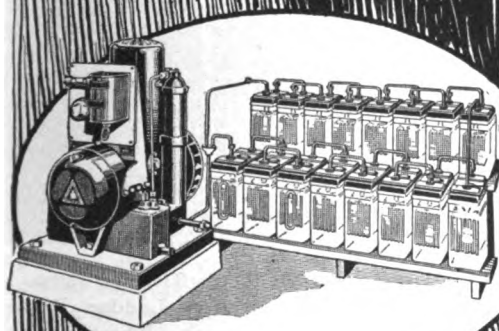
Please send me without obligation, the Delco-Light catalog, new prices and details of easy payment plan. F M 4

Name.....

Street (or R. F. D.).....

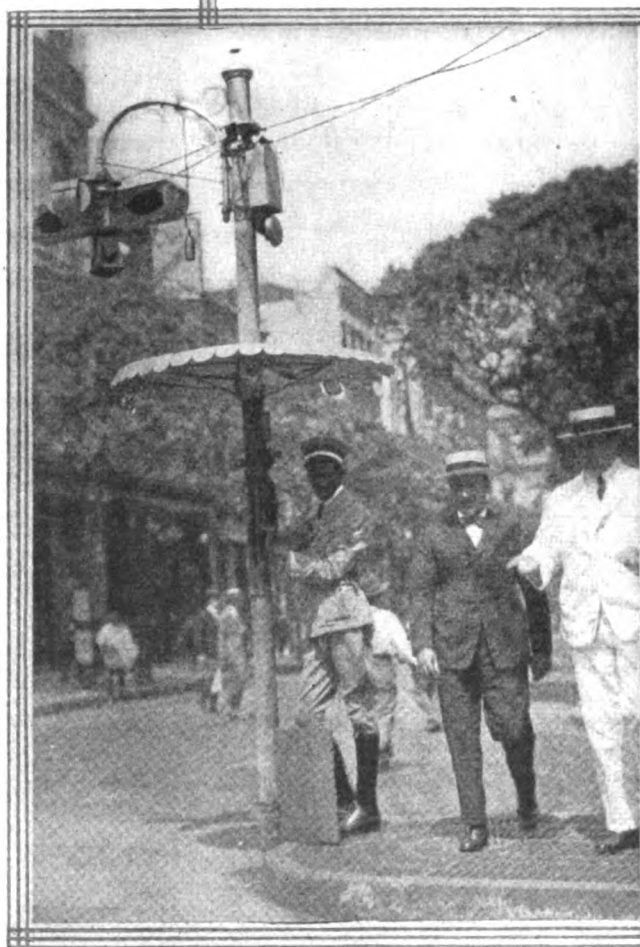
Town.....

County..... State.....





WINE IN THE MAKING. French vineyards are noted for the quantity and quality of wine grapes. In season the industry gives employment to many thousands of workers. Here is a scene at picking time.



COMFORT FOR COPS. The umbrella-like shade on the lamp post is for the comfort of the traffic policeman. No, this is not in an American city, but in Rio Janeiro, called the "Beautiful South American City."

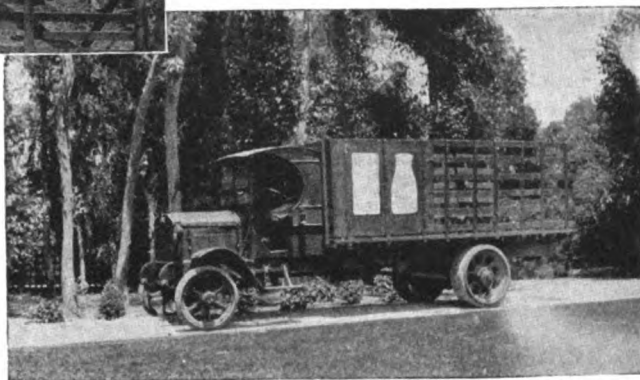


"SOME DAY I'LL BE A BOBBY." That, or something similar is what this, the smallest London Boy Scout, is saying to the London policeman. The picture was taken at a recent inspection of the scouts by the Prince of Wales.

General Motors Trucks



GMC truck used by the Arden Dairy Company of El Monte, Calif. to haul milk to Los Angeles.



GMC Helps Haul Milk From Herd of 350 Cows

Throughout the Los Angeles territory "Arden Certified Milk" is recognized as the last word in purity and food value. That this reputation is justified is shown in the fact that a bottle of Arden milk was sent across the continent to a New England fair, and there took the prize over the finest milk there.

The Arden Dairy is a large institution, milking about 350 Holstein cows and handling the product by the most improved mechanical methods. Yet this tremendous institution, representing the maximum of efficiency in all its branches, maintains this herd of milk cattle without pasturage facilities of any sort.

The location of the dairy, at El Monte, is some twenty miles distant from Los Angeles, from which point the bottled certified milk is distributed. Two trucks, one a GMC two-ton, are the transportation media for the institution.

By the use of this motor equipment the dairy is enabled to make schedule deliveries of its milk to the city twice each day and to bring from the markets all the supplies necessary for the feeding of the cattle and the operation of the place.

Just what part the trucks, and particularly the GMC play in this operation, is told by Mr. E. B. Carter, president of the company:

GMC Costs Less to Run

"At present we are operating only one GMC truck. However, I do not think it will be long before we are operating the second, because our other truck is getting worn out and the drivers will not be satisfied until it is replaced with a GMC.

"Although the other truck had given us good service, we decided to purchase a GMC for our second, when we learned that we could secure fully as great efficiency at a considerable saving over the other make. Since the time of our purchase, three years ago, the two trucks have been running side by side in the same class of work, but we are frank to say that we have heaped the loads a little higher and used the GMC a little more than the

other, and yet the showing in operation costs are all in its favor.

"Twice each day we load the trucks to more than capacity and send them into Los Angeles, which is the center of distribution for our milk. On the return trip they bring back a load of empty bottles and cases, and supplies for the ranch. You see we do all feeding on a mixed ration basis and there is no pasturage.

Carry Loads Both Ways

"The job of supplying such an institution as this with feed and other things, from a market twenty miles distant, is quite a job in itself, but the possibility of operating our trucks with a full load in both directions is one of the things that makes for economy and helps our earnings.

"Our GMC truck has given us excellent service ever since, and, as I say, we shall probably be purchasing another one soon, which is about the best recommendation we could give as to our satisfaction."

GMC chassis list at the factory as follows: one ton, \$1295; two ton, \$2375; and three and one half ton, \$3600; five ton, \$3950; tax to be added.

GENERAL MOTORS TRUCK COMPANY

Division of General Motors Corporation

PONTIAC, MICHIGAN

Dealers and Service in Most Communities



SCAT! But the one who tries to get familiar with this pussylike animal is not popular, as it is the common variety of skunk. However, he likes milk and steals it from the cat's dish.

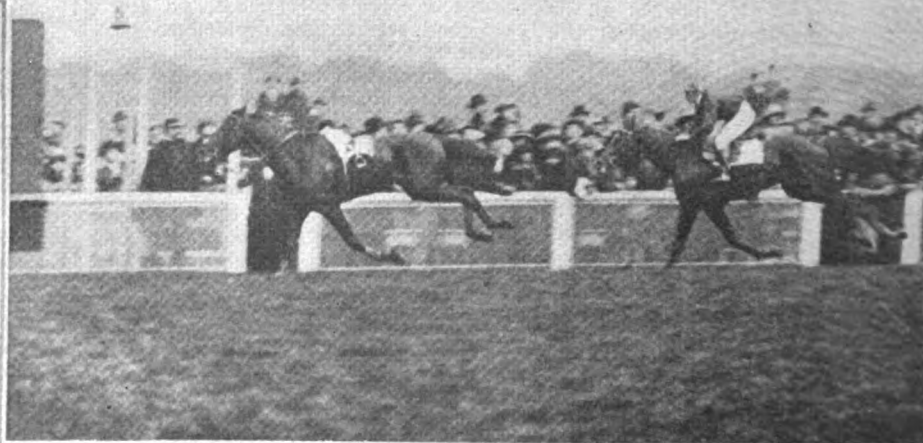
WOLF HOUNDS. These dogs are champions of their breed. They are owned by Mrs. Glen Stewart, of New York, who is shown with them in the picture. Mrs. Stewart is an enthusiastic horsewoman and follows the dogs in cross-country chase.



RUNAWAY? No, just a display of speed and nerve. This horse lost his jockey, but finished in front of the others.



MAN-HUNTERS. Police dogs have proved they are real criminal catchers in many cities. Before they get down to real work, however, they are trained, one of the stunts being high jumping with weights in their mouths.



The Work of the Month

ASIDE from getting ready for the spring work in the fields, the principal job for March is taking care of the farm livestock. The sows will be farrowing now; lambs will be coming on soon, and perhaps the cows will be calving, and the incubator hatches will be coming off. Extra care of the young animals will be more than repaid in the number saved and in their health.

CLEAN farrowing pens, with plenty of dry bedding, protection from drafts and freedom from worry are some of the things that help the sows when the young pigs are born. Sows should be accustomed to the attendant who is to care for them; then when they farrow they will not be nervous and be less liable to injure the newly born pigs. If the weather be extremely cold, a basket or box padded with cloth and heated with a hot water bottle or brick makes a comfortable nest for the pigs for a day or so.

THE brooder houses where the young chicks will be placed ought to be clean and free from lice. Whitewash is a good disinfectant and may be applied to the walls liberally. The floor may be covered with clean sand, and it should be kept clean. Buttermilk, or sour milk, together with buttermilk mash make proper feed for the young chicks. Also they should have a constant supply of clean water. Sitting hens should be dusted with lice powder several times during the hatch.

CLEAN the wheat and other seed that are to be planted this season. The work will be amply repaid in the crop. Elimination of weed seed and seed of grains other than are planted mean a better grading of the crop after threshing.

PREPAREDNESS in the matter of machinery repairs and parts replacements means that when any of the implements or machines are needed they will be ready for use. Leisure time now may be well employed doing this work. It is not too early to have the plow points sharpened, as a little grease will keep them bright and free from rust until they go into the field.

CLEAN up and paint up the milk house, or dairy, and any other buildings, either the interiors or exteriors, that need it. Select bright, clear days for the

work. The paint will dry more quickly.

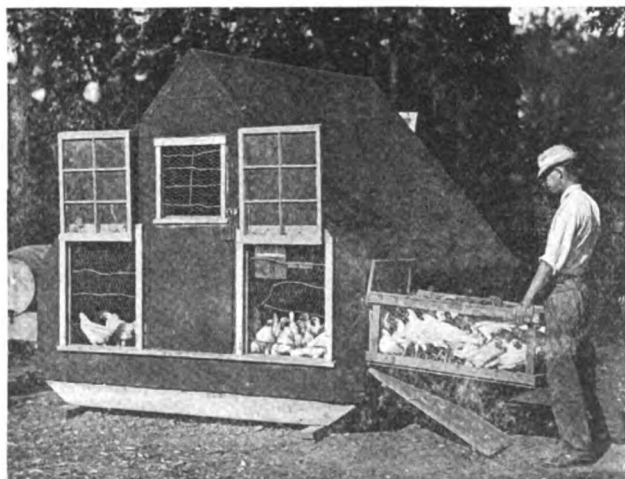
IT is getting near house-cleaning time. This is a period of feverish activity in the home. It also is the time when the housewife will realize what a blessing a basement heating plant is when compared with stoves; how much less work is required when there is a water

pressure system to bring the water to hand; and how much less expense and labor are required for spring cleaning in the home that has electric lights, and all the conveniences that electric power brings into the home.

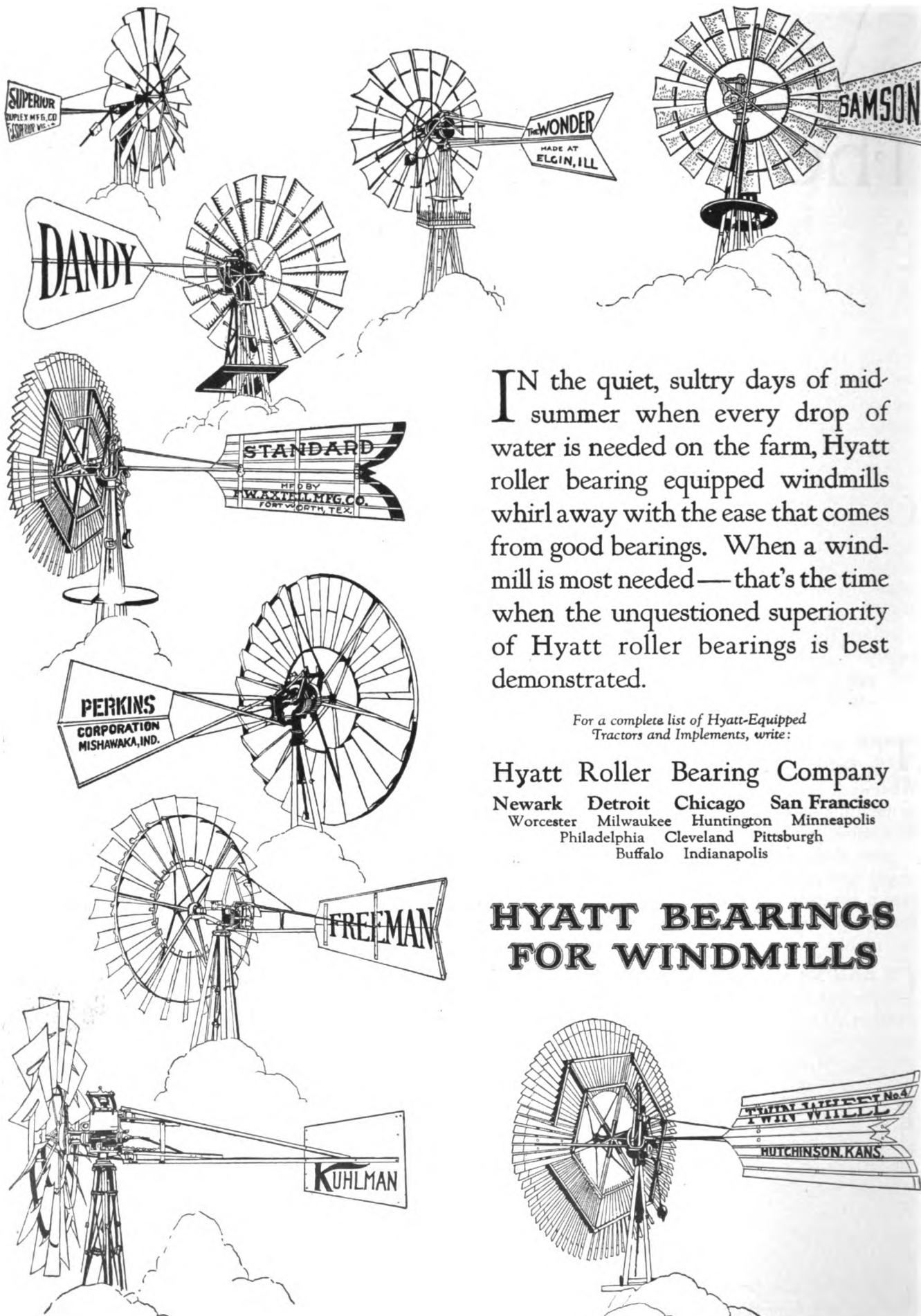
IF a rotation that includes some legume, such as alfalfa, clover, soybeans or cowpeas, is not practiced, plan one for the sake of the soil. A three or four-year rotation means bigger crops and greater fertility of the soil. Lime the fields where the legumes are to be planted. Also be sure the soil has been inoculated, if alfalfa has not been grown on the land before.

FENCES have a habit of getting out of repair. It's a good idea to take a walk along them to see what is needed to put them in good shape before the livestock is turned out.

HORSES that have not been working during the winter ought to be exercised before it comes time to plow. Then they will be harder and better able to get into their stride without having sore shoulders and strained muscles.



A Brooder House on Skids May be Moved Frequently to Give the Young Chicks Fresh Range.



IN the quiet, sultry days of mid-summer when every drop of water is needed on the farm, Hyatt roller bearing equipped windmills whirl away with the ease that comes from good bearings. When a windmill is most needed—that's the time when the unquestioned superiority of Hyatt roller bearings is best demonstrated.

For a complete list of Hyatt-Equipped Tractors and Implements, write:

Hyatt Roller Bearing Company
 Newark Detroit Chicago San Francisco
 Worcester Milwaukee Huntington Minneapolis
 Philadelphia Cleveland Pittsburgh
 Buffalo Indianapolis

HYATT BEARINGS FOR WINDMILLS



Use the Best Seed

PLOWING, harrowing, planting, cultivating, harvesting and marketing are, roughly, the operations every farmer goes thru in producing and realizing on his crops. Each takes just about as much time and energy when the crop is small as when it is large. About the only difference is in returns.

There is one insurance against poor crop, providing, of course, the seed bed is properly prepared and the soil has the right amount of plant food in it. That is good seed. No matter how much time and care and labor is spent in the other operations, the chances of a profitable crop are poor if the seed is poor. The chance for a good crop is bright if the seed is good.

Good seed costs more than poor seed, and is worth it. Too much care and investigation cannot be expended on the selection and purchase of seed. The county agent is a good man to advise with in this matter.



Planting

"AS Ye Plant, So Shall Ye Reap" is the title of an article on the use of the corn planter in this issue of FARM MECHANICS. Its author, Mr. Arnold P. Yerkes, knows his subject and has given some valuable pointers on how better crops may be grown by the right planting methods.



Know Your Tractor

THE leading article in this month's FARM MECHANICS is a description of how one tractor manufacturer is insuring satisfaction with the machine it puts into the hands of its customers. The Rumely Tractor School is unique; the description of it is interesting. But back of the school itself is a sound idea. Experience has proved that tractors are well adapted to American farming. The advent of a new method of doing work by machinery always is looked at askance by some skeptics. Note the experience of Whitney with his cotton gin, McCormick with his selfbinder, and the pioneer automobile and truck manufacturers. Tractors, or

some other power-driven machine not yet named, will eventually be the power employed on American farms. There is no doubt about it. Knowing how to operate these machines will bring success to farmers.

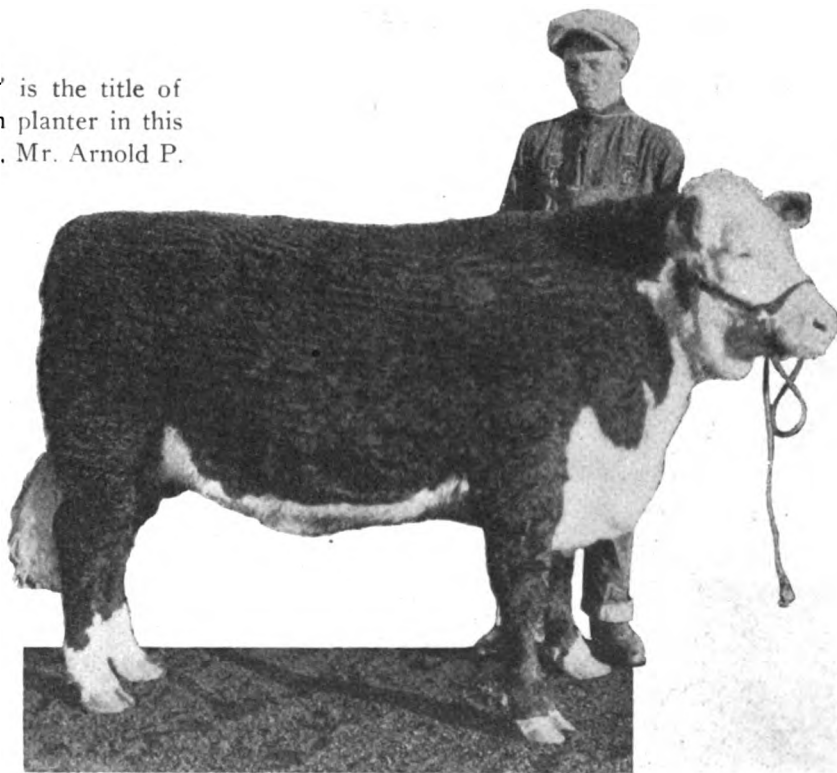


Boy Stock Raisers

TAKE a look at the steer and the boy shown in the picture. Then read what this boy has accomplished. Calf clubs, pig clubs and the other clubs that inspire boys and girls to learn how to profitably raise these animals are doing much for the future prosperity of the farm. Encourage your boy or girl to join one.



MORE acres of legumes and fewer pounds of purchased commercial nitrogen is in line with the needed economy in the 1923 fertilizer expenditure.



Here Is Joseph Isaksen, of Springfield, Minnesota, with His Grade Hereford Yearling Steer which Won the Grand Championship Over All Breeds in Competition with 210 Entries at the Recent Junior Livestock Show in St. Paul.

In addition to \$1,150 in money, the steer earned for Joseph two silver trophy-cups, valued at \$100 each and free trips to the Junior Livestock Show in St. Paul and the International Livestock Exposition in Chicago. The Hereford weighed 1,221 pounds at the age of fifteen months, sold for 75 cents per pound and dressed 67.4 per cent. Joseph is enthusiastic about the cattle business and after studying animal husbandry at the University Farm intends to help father.

"Owners, Know Your Tractor"

That Command is Put Into Practice By the Advance-Rumely Thresher Co. Inc., Which Conducts Schools to Make Efficient Operators of OilPull Owners and Dealers

By JOSEPH D. EDDY

E. E. AUMAN owns and operates a 200-acre farm near Somerset, Pa. He is a power farmer. During the last four years he has used a light tractor on his place. Mr. Auman is thoroly convinced from his experience that the tractor fits into his farm operations in a profitable way. The only drawback he found was that the tractor he owned was too light for plowing efficiently on his place. His land is stony and hilly. He needed more power. So this year he sold his old tractor and purchased an Advance-Rumely OilPull from his dealer, H. H. Moore at Somerset.

There is nothing unusual about this transaction. Thousands of farmers are joining the ranks of tractor owners every year. They have watched tractors at work on neighboring farms and have become convinced that the modern method of farming with power-driven machinery is the most satisfactory and profitable. Converted, they make the purchase.

Becoming the owner of an OilPull tractor gave Mr. Auman the opportunity of attending one of the Advance-Rumely Company tractor schools. The nearest one to Mr. Auman was that held the first week in February in LaPorte, Ind., where the plant of the Advance-Rumely Co. is located. He had been there nearly the week when he was asked what he thought of the school.

"Wonderful," replied Mr. Auman. "A number of my neighbors have attended the school in other years. There are about twenty-five from my section of the state here now. From what I had heard of the school I thought 'If it's half as good as the neighbors say it is, it must be worth-while.' So I packed up and came. It has been an eye-opener. I operated a tractor on my farm four years. I had been with a thresh-



"A Class" of the Advance-Rumely Tractor School Arriving at LaPorte, Ind., on Special Train from Columbus Branch for a Week of Instruction in the Operation and Care of the OilPull Tractor.

ing outfit for several seasons. I thought I knew considerable about a tractor, and I did. But there are points about carburetion, lubrication, adjustments and many other small but important points in the operation and maintenance of a tractor that I did not know. Here I have learned them. I feel that it has

been a most profitable week for me. I'll save many, many dollars thru the knowledge of my tractor I have gained here. I am better fitted to get the most out of it on my farm."

Many others at the Advance-Rumely Tractor School, as it is named, were asked the same question. Without exception all of the farmers questioned made the same reply.

Thru its eleven schools, held in different parts of the Middle West, the Southwest and Northwest, the Advance-Rumely Thresher Co. is educating every year 2,500 men to be more efficient tractor operators.

It is unusual, to say the least, to see more than 300 men (that is the number that can be accommodated at each of the schools) giv-



George W. Iverson, Advertising Manager of the Advance-Rumely Thresher Co., Inc., Who Has Charge of the Rumely Tractor Schools. Mr. Iverson is an agricultural engineer, a graduate of the Iowa State College, and is the principal lecturer at the schools.

ing up a week of their time to attend these classes. There were old men and young men; farmers and business men. Some were sons of farmers; others owners. The former had come to learn how to "run dad's tractor." The latter wanted to learn about the machines they own and operate themselves.

They listened to lectures, following closely the simple, non-technical talks on the different parts of the tractor by experts. At the conclusion of the lectures, they would hustle into overalls and jumpers and go to the laboratory. There they put into practice by actually doing the work the things they had heard described at the lectures. This morning they had heard a comprehensive description of the magneto, its various parts and how it operates. With these facts still in their minds they went to the laboratory and spent two hours taking magnetos apart and putting them together again, making adjustments and replacing them on the tractor engine. All of this

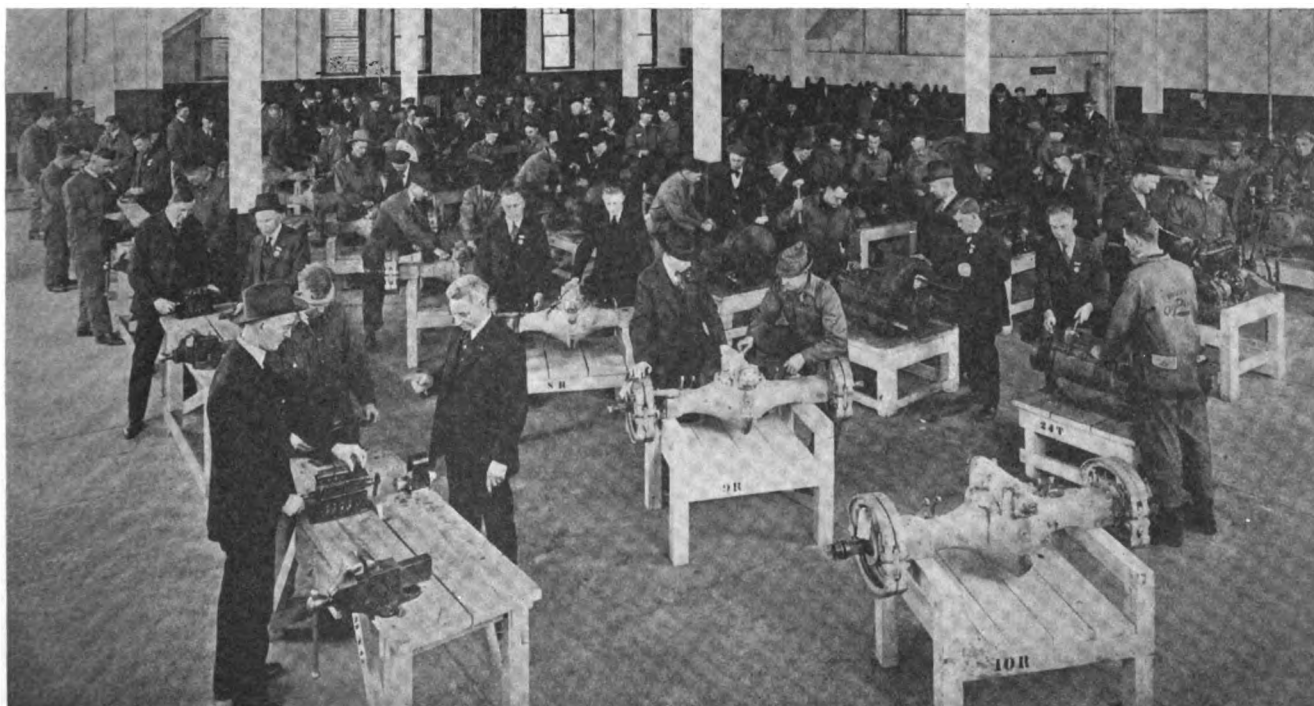


Finley P. Mount, President of the Advance-Rumely Co. "The Chief," as Mr. Mount is called by everyone connected with the company, is the sponsor for the tractor schools and attends all the sessions and, incidently, never misses the banquets that mark the end of the schools. The schools are an example of the broadminded policies of the company which have been put into effect by Mr. Mount.

work was done under the guidance of trained factory experts. In the afternoon the lubrication system was discussed. Then came the laboratory work on this most important part of the machine. Crowded into that day was a large amount of practical tractor information. So much, in fact, that one doubted if the things learned would be retained.

This doubt was expressed to one of the Advance-Rumely dealers who has been a steady year-in-and-year-out attendant of the schools. Here is what he answered:

"They forget some of it; some of it they keep. But here is what it does for them and for me. When they run up against a problem in adjustment, they call me up. They know that they were told how to do this, and had done it in the laboratory work. It is a simple matter for me to go over it again by telephone. As I describe how the adjustment should be made, it comes back to them. These schools have saved me many a long drive and



In the Laboratory of the Advance-Rumely Tractor School at Laporte, Ind. Here those who spend a week studying the OilPull tractor put into practice the theories of care and repair learned in the lecture room. Six carloads of equipment are taken from city to city for use in the schools.



The "Teachers" of the Rumely Tractor School. Surrounding Mr. Iverson are the experts who supervise the laboratory work of the farmers and dealers who attend the school.

have saved my customers many hours of time that would be lost to them had they not been familiar with their tractors."

This is the fifth year of the Rumely tractor schools. Begun in 1919 as a means whereby dealers would be enabled to learn more about the tractors they were to sell, the schools have steadily grown in number of attendants and in value. Dealers early conceived the value of these schools to the owners of tractors they had sold. Their requests that their customers be allowed to attend brought about the arrangement that has opened the schools to dealers and owners alike.

The first school of the season is held at Dallas, Tex., beginning the middle of December. With a week's lull for the holidays, they run continuously from then thru the first week in March. Following Dallas, the schools are held at Wichita, Kans.; Kansas City, Mo.; Des Moines, Ia.; Omaha, Neb.; two weeks at La Porte, Ind.; Madison, Wis.; Minneapolis, Minn.; Aberdeen, S. D., and Fargo, N. D. The schools are held at the Advance-Rumely branches and are open to the dealers and customers in the territory which each branch serves.

Some idea of the extent of this enterprise on the part of the company and its branches may be gained from the fact that six carloads of tractor parts and equipment are constantly on the move during the school season. The equipment for holding the schools is complete even to the coat racks and wash stands that are set up for the convenience of the "pupils." Three of the school motor busses manufactured by the Advance-Rumely Co. go along with the equipment for use for sight-seeing in the various cities where the schools are held.

One unique piece that is carried is a magneto, constructed of wood. This is a duplicate of the magneto used on the tractor, each part being complete and three times the size of a real magneto. It enables the lecturer, as he is explaining each part, to demonstrate it with the wooden reproduction of a size that can readily be seen by his audience.

Another feature of the equipment are parts of the tractor in



Working on the Motor of the OilPull Tractor at the Rumely Tractor School Laboratory.

their various stages of manufacture. An example is the rough casting from which the piston is made, showing it in four stages of development, the last being the finished product fitted with rings.

Practically every working part of the engine and machine are included so that the lecturers may point to each feature as it is being described, and his hearers may visualize the description of the part and its functions.

The Rumely tractor schools are supervised by George W. Iverson, who combines this work with the duties of advertising manager of the Advance-Rumely Thresher Co. Mr. Iverson is a graduate of Iowa State College at Ames, having, under Prof. J. B. Davidson, taken the degree of agricultural engineer. Besides managing the schools, Mr. Iverson takes an active part in them, lecturing on the principles of gas engine construction, and various features of the OilPull, such as carburetion and lubrication systems and the care and operation of the tractor.

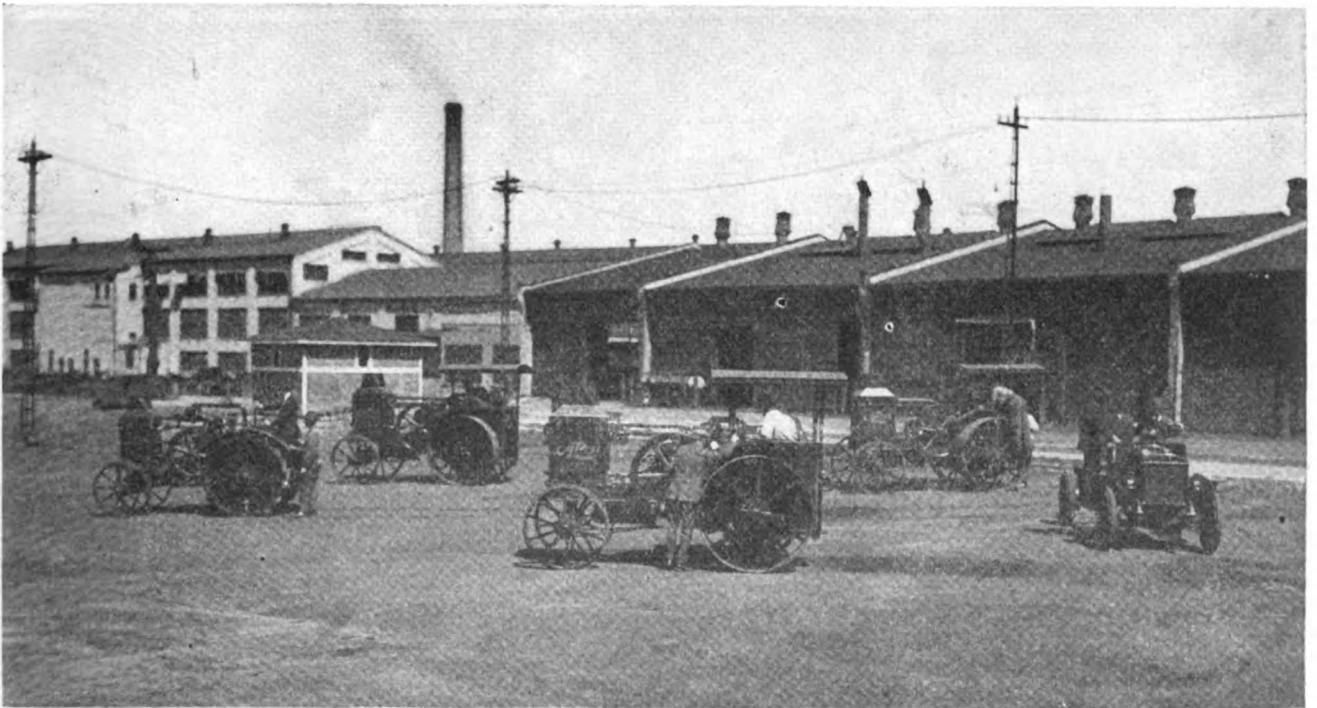
Assisting Mr. Iverson at all the schools is J. Leo Ahart, also an agricultural engineer from Ames, the originator of the Ahart Method of laying out fields for tractor plowing. Mr. Ahart is a practical farmer, operating a 600-acre Iowa farm. He conducts the



Studying at Close Range the Transmission of the OilPull Tractor.

school sessions on the magneto and lectures on plows and plowing and power farming from the viewpoint of both a practical farmer and an agricultural engineer.

Coupled with these two men are the heads of the Agricultural Engineering departments at the state agricultural colleges in the states in which the schools are held. The college men who assisted this year



Learning to Operate the OilPull Tractor at the Rumely Tractor School. These machines are placed at the disposal of the attendants to the school during the week, and they are taught to operate them under the supervision of expert tractor operators.



J. Leo Ahart, the Expert on Plows and Plowing, Who Handles These Subjects, as Well as the Classes on Magnetos and Power Farming at the Rumely Tractor Schools.

were: Prof. Daniel Scoates, of the Texas A. & M. College; Prof. H. B. Walker, of the Kansas Agricultural College; Prof. O. W. Sjogren, of the University of Nebraska; Prof. J. B. Davidson, of Iowa State College; Prof. Aikenhead, of Purdue University; Prof. G. W. McCuen, of Ohio State University; Prof. L. B. Bassett, of the University of Minnesota. Another speaker was Guy F. Hall, of the National Institute of Progressive Farming.

At the conclusion of each of the lectures held during the school, questions are invited. And the questions that are asked! Dozens of them. In answering

them points often are brought out that otherwise would have been overlooked because they involve fundamentals which experts are apt to think everyone knows but which, as a matter of fact, many do not know.

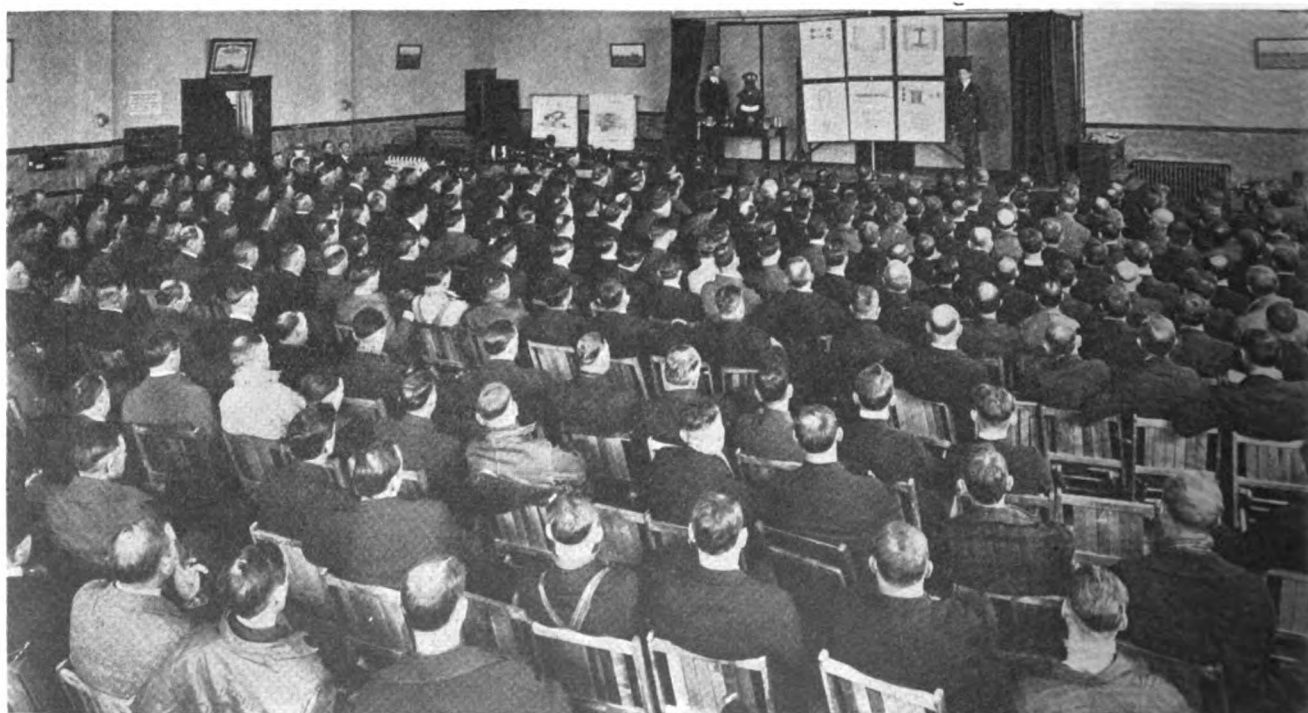
Laboratory instructors at the various schools were drawn from the company's plant and from its branches. All of these men are practical mechanics, experts in the manufacture, care and operation of OilPull tractors. All the work of the students in the school laboratories is done under the eyes of these instructors, who also conduct the school of operation, held outdoors in connection with the schools.

At the beginning of the school each attendant is furnished with a tractor manual, which is planned along the lines of a college text book. One part is devoted exclu-

sively to the care and operation of the tractor. The second part is exercise instructions and the questions that naturally arise during the exercise. How complete these exercises and questions are may be gained from the sample on "Tractor Operation," which follows, the questions being in one section and the exercises in the other:

QUESTIONS OPERATION EXERCISE

1. How do you start the engine?
2. How would you start the OilPull when warm?
3. How do you switch from gasoline to kerosene on the OilPull?



One of the Rumely Tractor Schools in Session. Here are more than 300 men, old and young, farmers and dealers, who spend a week learning their tractor.



In the Laboratory of the Rumely Tractor School held at Dallas, Tex. The hats on the two men in the left foreground tell the experienced reader what state they hail from.

4. When do you turn on the water?
5. What precautions should be taken before starting engine?
6. Why should the lubricator handle be turned 50 or 60 turns before starting?
7. How can you determine whether mixture is too rich or too lean?
8. How would you start an engine when it is flooded?
9. What precaution should be taken when changing the gears?
10. What is the correct way to engage the clutch?
11. What is the foot brake used for?
12. How would you engage the gears when backing into the belt, and why?
13. How can the gears be shifted into neutral if they "stick" when the tension of the belt is on the belt wheel?
14. What is the clutch brake for and how is it adjusted?
15. What is a good indication that cooling oil is too low in the radiator?
16. What causes the engine to overheat?
17. For what purpose is water fed in the carburetor?
18. Why should the water be turned off first when stopping the engine?
19. What is the plowing speed of the OilPull?
20. What is high speed used for?
21. Why should you always select a level spot for doing belt work?

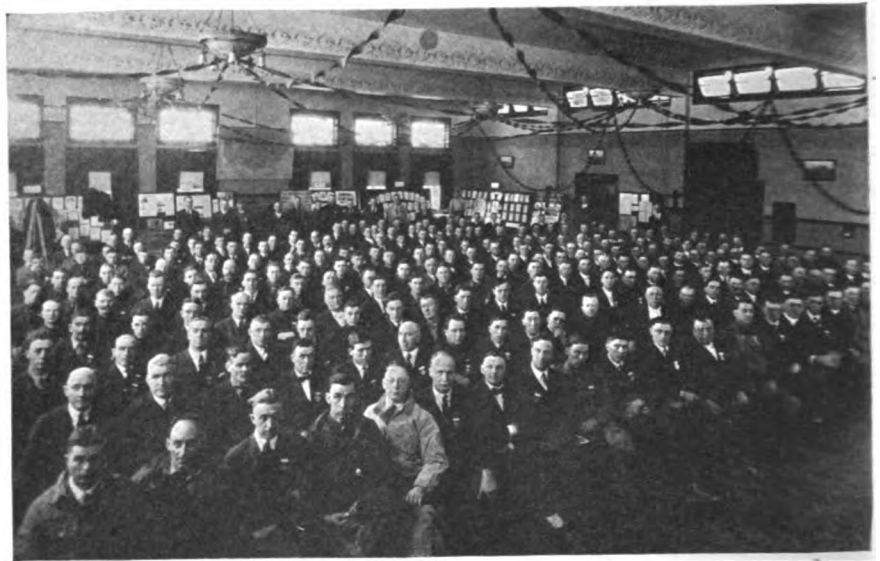


The Class in the Lecture Room at the Dallas, Tex., Rumely Tractor School.



The Minneapolis Rumely Tractor School in Session.

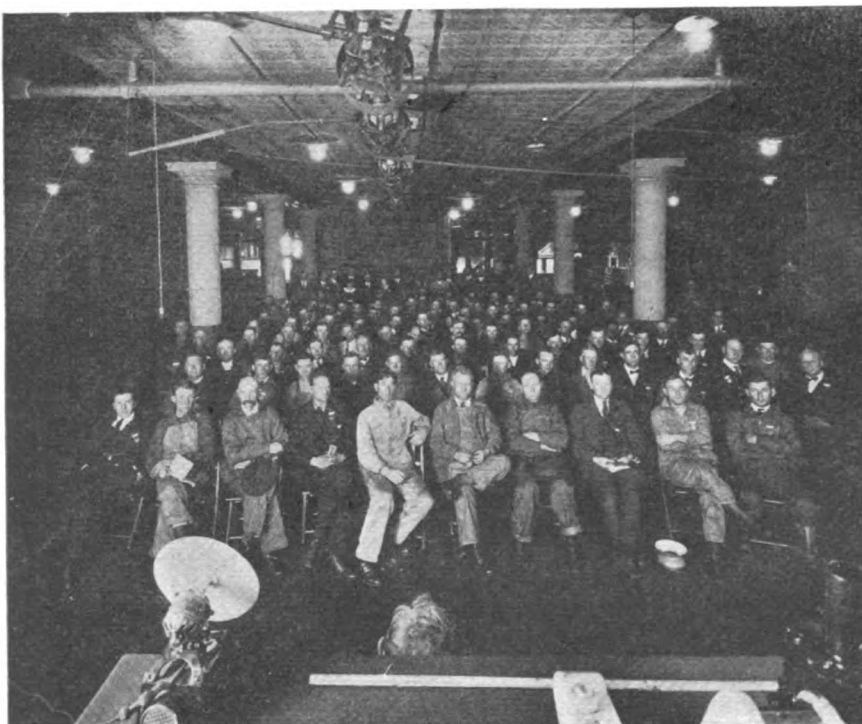
22. What kind of water should be used?
23. What is the oil level of the crank case and how is it maintained?
24. How often should the oil be changed in the crank case?
25. How is the belt clearance obtained?
26. Why should a tractor not be loaded to its maximum capacity?
27. How can you determine that the tractor is getting sufficient cup grease?
28. How can the mesh of the master gear and master pinion be changed on the OilPull?



Listening to a Lecture at the Rumely School Held at LaPorte.

5. Stop the tractor and get answers to following questions: 14, 15, 16, 19, 20, 21, 26, 27, 28, 29, 30, 31, 32, 33, 34.
6. Stop the motor.
Refer to question 18.
7. Start the motor when warm.
Refer to questions 2 and 8.
8. Line up to some object with the belt wheel.
Refer to questions 12 and 13.
9. Back up to some object.
Refer to question 27.
10. Shift the frame for belt work.
Refer to question 25.

Programs for each of the five days the schools last are planned so that every hour is occupied. Just as much instruction as can be is crowded into the course. But good judgment has been used in the selection of the subjects that are covered. First there are the fundamentals of tractor mechan-



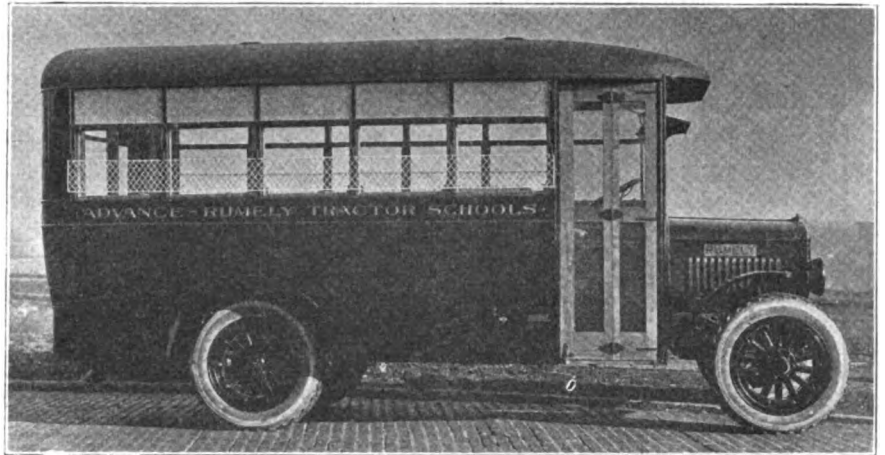
There Always Is a Large Attendance at the Rumely School Held in Kansas City.

ism, engine and transmission; then a study of each part, especially of the engine, which is generally termed "the heart of the tractor." Next the operation and care of the tractor. This gives the course a wide range, but each subject is handled so that there is laid a groundwork which will enable an operator to handle his tractor properly, make adjustments and be able to keep it in good running order.

In keeping with the general plan of instruction, a period is given in lectures and in the laboratory to the Rumely truck. This part of the work is handled by F. P. Shortle.

Besides the opportunity provided by the Rumely busses for sight-seeing, there is provided an entertainment for four of the five evenings. The first night there is a get-together meeting and smoker, at which introductions are general and a comradeship among the visitors established. On each of the next two evenings there are entertainments, consisting of concerts, theater parties and other features. The final night is given over to a banquet, which is followed by a dance.

This outline of the Rumely tractor school will give an idea of the opportunity those in attendance have to learn their tractors. While it is rather a side issue, there also is held simultaneously a school on threshing separators, another of the company's products. As



The Advance-Rumely Motor Bus Which Is a Part of the School Equipment. Three of these buses travel from city to city and are used by the attendants at the school for sight-seeing trips, while at the same time they are becoming familiar with this product of the company.

many tractor owners, especially of the larger sizes, also own threshing outfits and make custom threshing a part of their business, this feature fits nicely into the tractor course. At LaPorte the separator school was well attended, many of the tractor owners owning outfits or contemplating the purchase of them. The lecture work in this department is handled by Mr. R. H. S. Henderson.

Rumely tractor schools are costing the company what to the average mind would seem an immense amount of money. And the natural question is: Do they pay, and how?

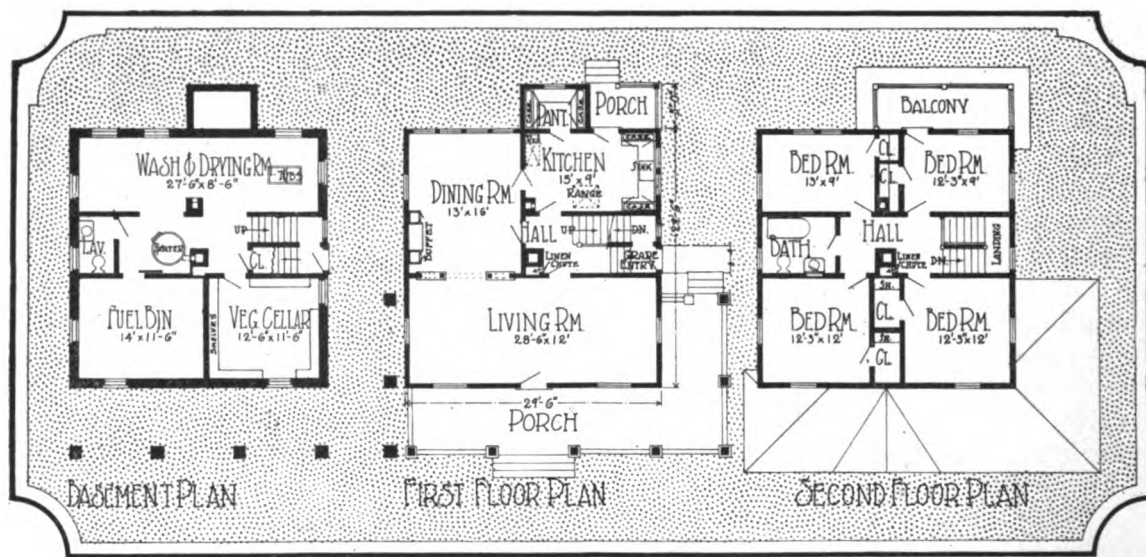
Primarily these schools help the dealers sell tractors and threshing separators. But there is a deeper

(Continued to page 52.)

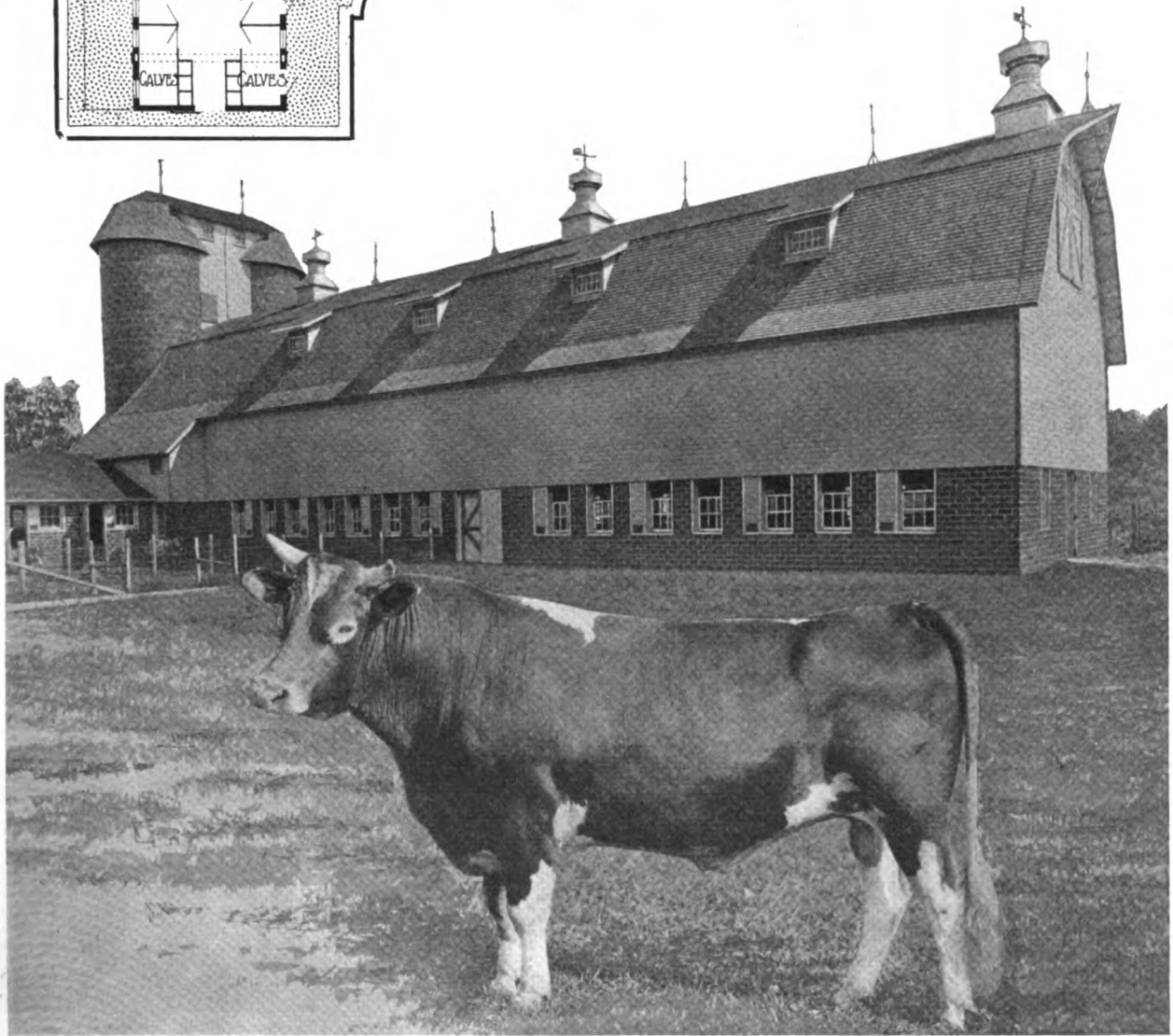
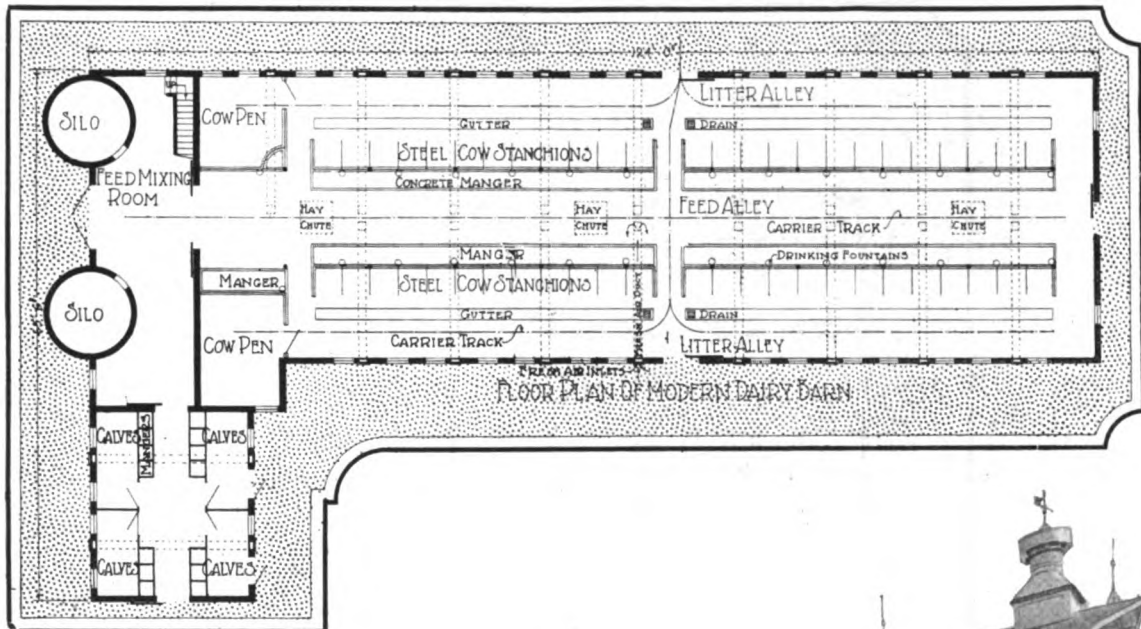


Laboratory Work, as It Is Called, but Which Is in Reality Practical Shop Work on the Tractor and All Its Parts Is a Big Feature of the Rumely Tractor Schools.

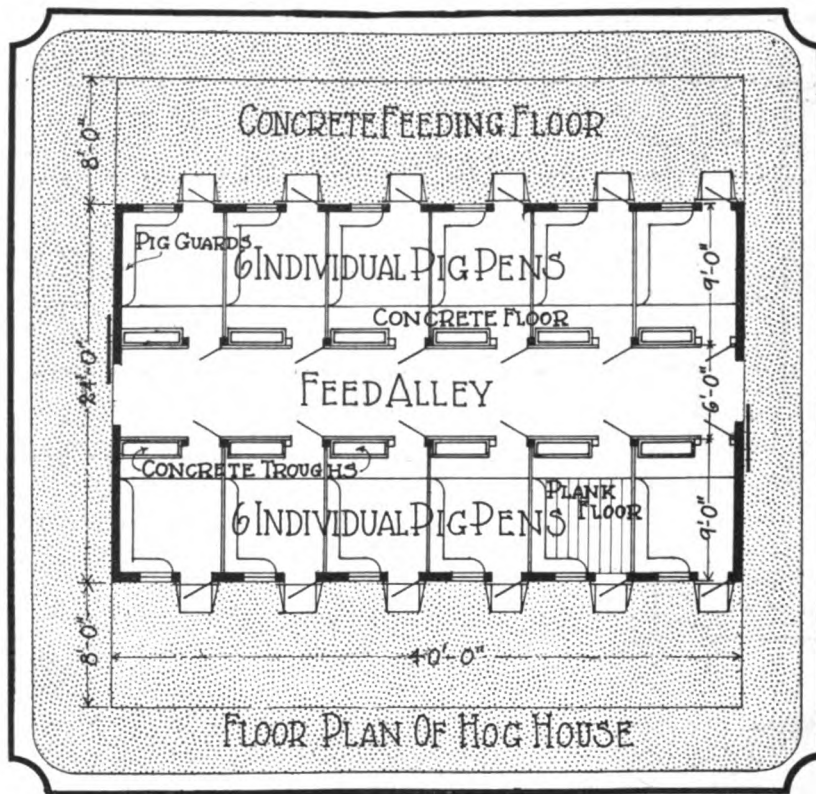
FARM MECHANICS BUILDING DESIGNS



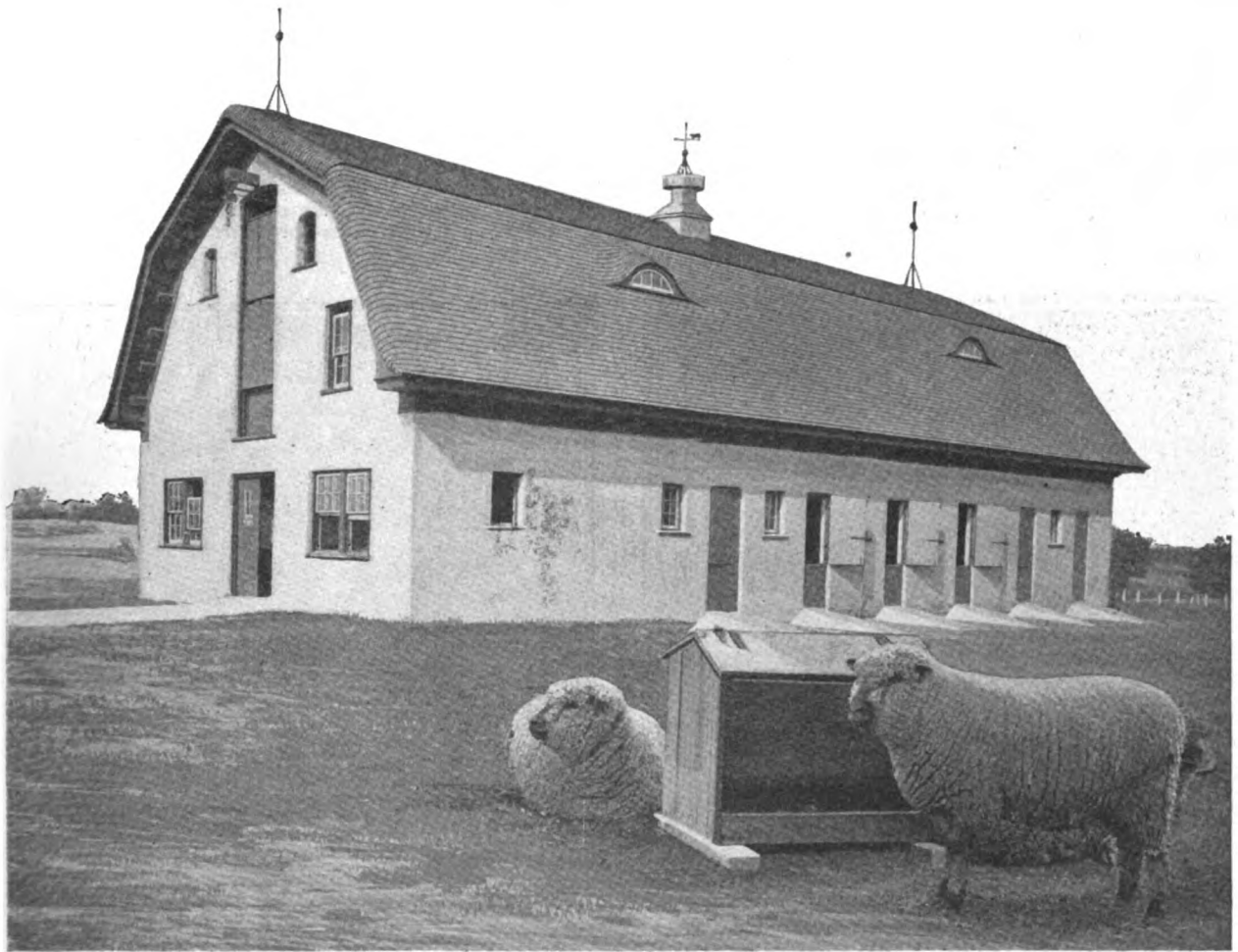
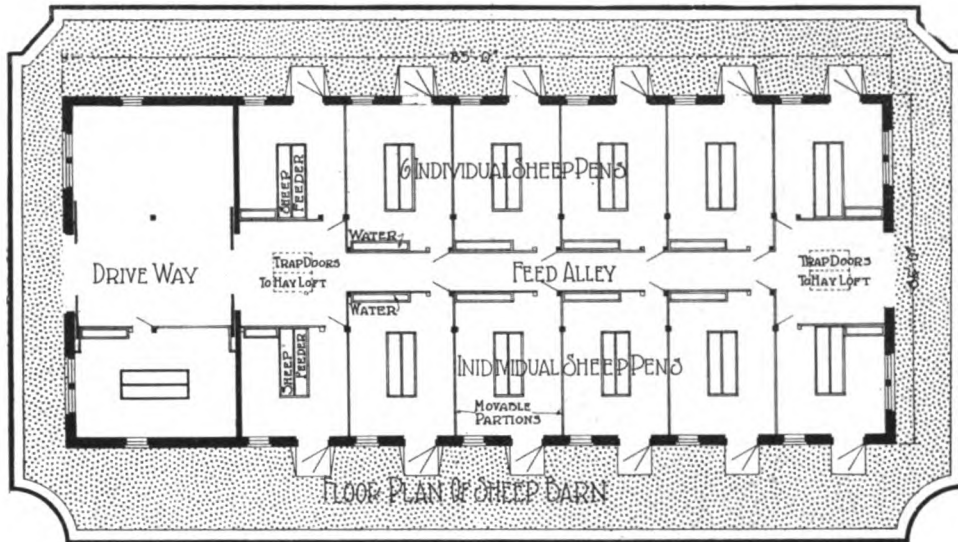
PRACTICAL FARM HOME. Square houses are economical to build and provide comfortable, good looking homes. The house shown above is 29 feet 6 inches square. The hip roof and dormer and inviting porch give it a pleasing exterior appearance. The house contains seven rooms, three on the first floor and four bedrooms and the bathroom on the second. How these rooms are arranged and their sizes are shown on the floor plans, as well as the basement arrangement. Such a home as this together with the fine dairy barn shown beside it make a fine farm building group.



LARGE DAIRY BARN. For the dairyman who has a large herd, the barn shown is an excellent investment, for it provides stable room for 50 cows, the herd sire and the calves, as well as storage space for their feed. The building has a hollow clay tile foundation, the walls of which extend to the second floor. Above it is of standard frame construction. Provision is made for good ventilation and for water at each stall. The building is 124 feet long and 36 feet wide, with calf barn addition adjoining it. Two silos at the end, connected with the feed room, provide storage for the feed, while there is ample space in the mow floor for the roughage.



SUNSHINE HOG HOUSE. Sunshine performs two important things that affect the health of sows and their pigs. First it provides heat and, second, it kills disease germs. That is why hog houses are designed so that a maximum amount of sunshine can penetrate to the pens. This saw-tooth roof hog house is set to face the south. In late winter and early spring the sun's rays reach the pens on both sides, thus keeping the interior warm, dry and healthful. Doors at the floor lines permit the hogs to reach the concrete feeding floor outside, thus making the house a shelter in summer as well as a winter farrowing house. The building is 24 by 40 feet.

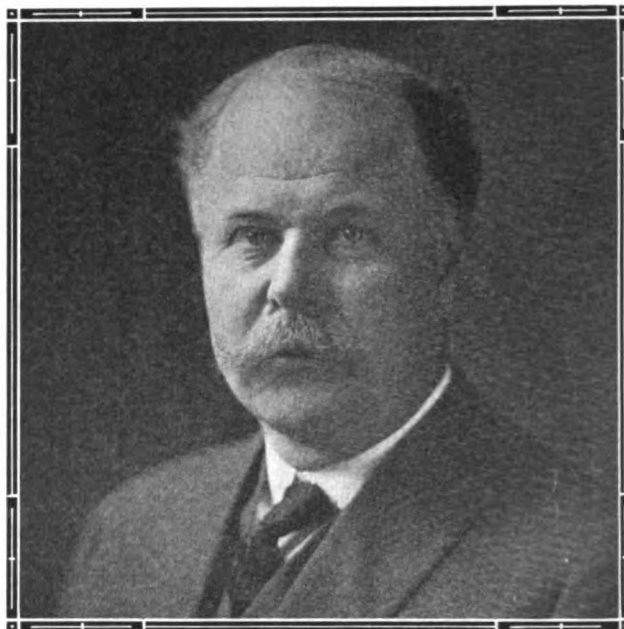


AN ATTRACTIVE SHEEP BARN. While this building is probably more elaborate than will be found on most farms, it provides an excellent home for the farm flock. The first floor is equipped with movable pen partitions and has a feeding alley thru the center, with a trap door to the hay loft. It is 36 feet wide and 85 feet long. The walls are of poured concrete, while the thatched roof effect adds to the beauty of the building. Built of these materials the building is permanent and while the first cost is rather large, there will be practically no expense for upkeep and none for replacement.

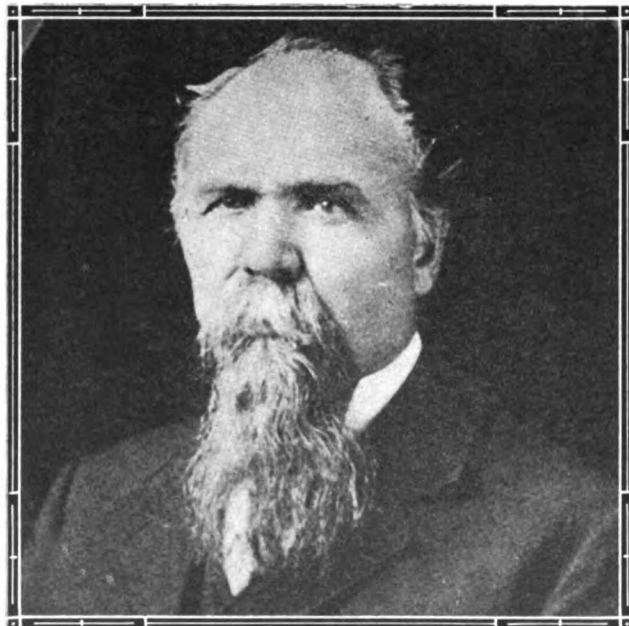
Who Did Most for Farmers ?



THE name of JOHN DEERE always will be associated with plows, for it was in his blacksmith shop at Grand Detour, Ill., that he made the first steel plow, hammering it out by hand on the anvil of his shop. The demand for steel plows which were better adapted to the soil of the middle west brought increasing business to the shop. From this beginning developed the John Deere Co., which later moved to Moline. Mr. Deere died in 1886, at the age of 83 years. In his early days he would stand at his anvil from 5 in the morning until 9 at night, building plows, shoeing horses and constructing machinery for sawmills.

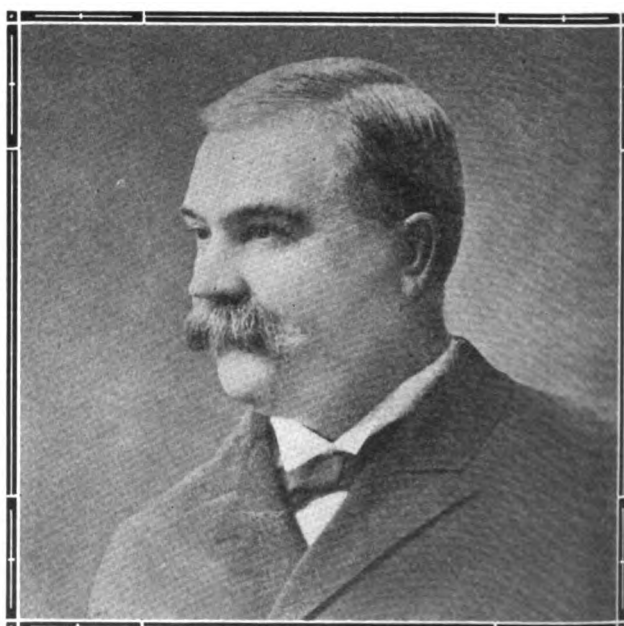


DURING the 29 years which he has been connected with the teaching, research and administrative staff of the University of Wisconsin, DEAN HARRY LUMEN RUSSELL has made notable contributions in several different lines. Officials of the National Canners Association have credited his work in canning as being a foundation upon which much of the present industry rests. Cheese makers recognize in the system of cold curing worked out by him and Dr. S. M. Babcock, as one of the fundamentals of their industry, and stockmen see in his work of eradication of bovine tuberculosis a contribution of tremendous importance.

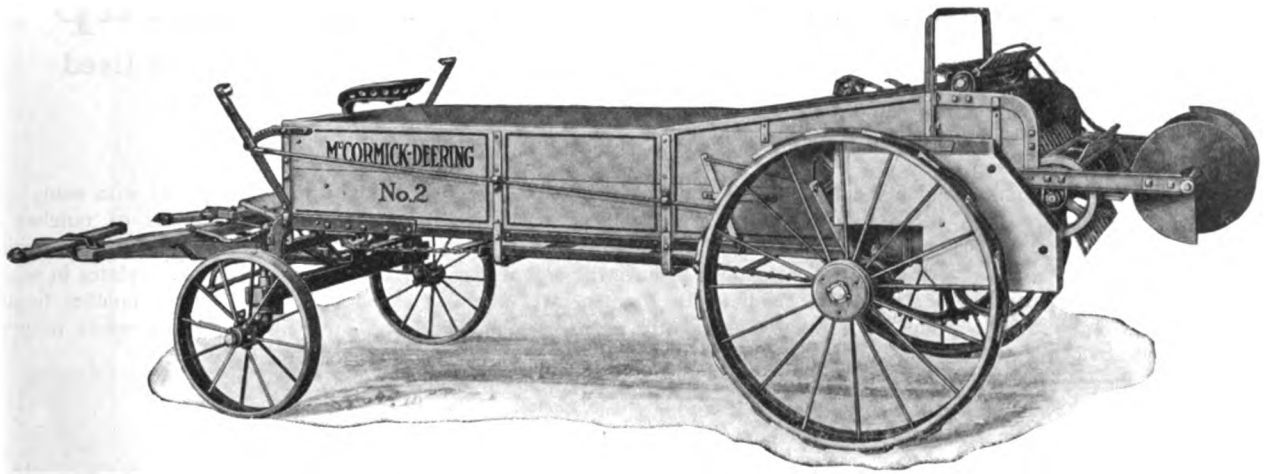


WHILE a member of the staff of the University of Wisconsin, F. H. KING worked out the system of ventilation which bears his name. He appreciated as have few men, the necessity for health in livestock.

Had he contributed nothing else than his system of ventilation, King would be entitled to have his name enrolled high upon America's Agricultural Honor Roll. His contributions, however, are not limited to this single discovery. For his work with silos and silage was a tremendous stimulus to the construction of silos and not only in the Badger state but thruout the country.



WHEN a small staff of speakers and an audience of farmers met at Hudson, Wisconsin, in 1886, they held the first Farmers' Institute in America. While the idea originated with a group of men including Attorney C. E. Estabrook and Dean W. A. Henry, it fell to the lot of SUPERINTENDENT W. H. MORRISON to administer this great pioneer extension movement. It is doubtful if any other single force has had a greater influence upon the agricultural practices of the Badger state. The idea has been copied widely thruout the country, resulting in widespread improvement in farming practices.



Invest in a McCormick-Deering Manure Spreader for More Profitable Farming

THE basis of profitable farming is a fertile soil. In farming, as in other businesses, there are poor years and good ones, but the farmer who keeps up the productivity of his soil will forge ahead.

No method of maintaining soil fertility has proved so efficient as the proper application of barnyard manure. It is a foresighted policy to build up crop yields with a McCormick-Deering Manure Spreader. Put manure on your fields finely, evenly, uniformly, and economically; the extra fertility will in a short time pay for the McCormick-Deering spreader.

See the McCormick-Deering dealer.

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93 Branch Houses and 15,000 Dealers in the United States



Note again these features in McCormick-Deering construction: 1. Power delivered from both wheels. 2. Double ratchet drive with six feed speeds. 3. Short-turn front axle—no pole whipping. 4. Rear wheels track with front wheels. 5. Tight bottom. 6. Two beaters and wide-spread spiral. 7. All-steel main frame.

As Ye Plant, So Shall Ye Reap

The Stand of Corn, Cotton or Any Other Crop Depends on the Care Used in Planting as Well as on the Quality of Seed Bed and Seed

By ARNOLD P. YERKES

NO farmer would think of planting corn, cotton, or any other crop, and skip each fourth row. It is too obvious that such a practice would mean only three-quarters of the crop which the land should produce. And yet many men do plant their crops in such a way that the actual effect is equivalent to skipping every fourth row. A 75 per cent stand due to missed hills and small hills will only produce the same quantity as would be obtained from the same field with every fourth row skipped, and with the others having perfect stands, and 75 percent stands, or even less, are far too common.

It is rather astonishing how many men will take great pains in preparing an excellent seed bed and obtaining high-grade seed and carefully testing it, who will offset this careful management by doing a poor job of planting and thus have only a partial stand.

It is quite common, too, to hear a farmer blame his planter for the poor stand of corn or other crop. But, as a matter of fact, most poor stands are due to poor operation of the planter rather than to the planter itself. Most planters on the market today will do a 100 per cent job if they are handled just right. It is true that some are more accurate and reliable than others under given conditions, but practically all of them will give satisfactory results if conditions are made right. This means that a farmer should use care in select-

ing his planter, in order to get one which will work perfectly even under some adverse conditions, but if he doesn't happen to have the best it means that he must use greater care to make the work as easy for it as possible, for the less efficient the machine the more important it becomes to have clean, well graded seed and seed with a high germinating percentage.

Just consider for a moment the work a check-row corn planter has to do. It must carefully measure out exactly the right number of kernels for each hill, open the furrow to the proper depth, deposit the seed close together and directly in line with the hills in previous rows, pull just enough dirt over it, and firm the dirt about the seed so the young roots will find it easy to obtain a foothold in the surrounding soil. This is not an easy job even when conditions are made just right, but the planters will do work almost 100 per cent perfect if properly handled. However,

the plates which pick out the grains of corn for each hill have openings of a fixed size and shape for each plate, and no reasonable man who had the slightest knowledge of how these plates pick out the kernels for each hill would expect them to work perfectly with a supply of seed in which grains of all shapes and sizes are found, or in which there is a lot of chaff or other dirt to get into the notches and thus prevent the grains from entering them.

The manufactur-

ers furnish these plates with many different shapes and sizes of notches to meet different shapes and sizes of grains. They even furnish blank plates in which the farmer can file the notches to suit the particular grains he wants to plant



A Roller or Cultipacker on a Cloddy Field Like this Makes a Better Seed Bed, with More Moisture and More Plant Food Ready for the Young Corn—Incidentally it Would Put It In Better Shape for the Planter. It is hard for the planter to do a first-class job in cloddy ground.

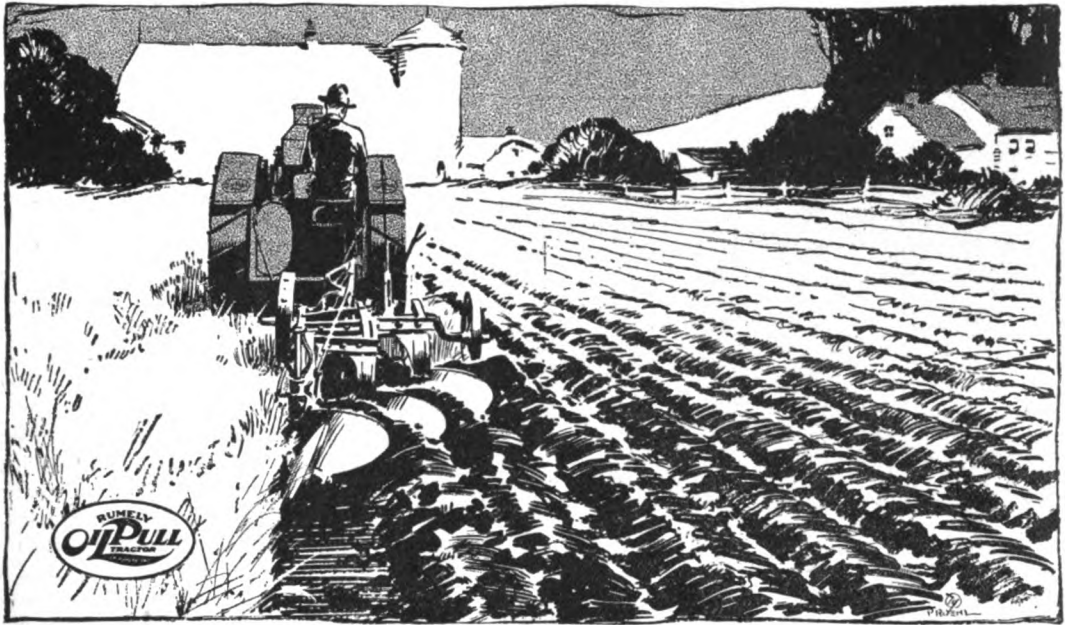
in case none of the standard plates will answer the purpose. But the manufacturer cannot supply the machine with the brain necessary to select the proper plate—that is something which must be left to the operator. Nor is it practicable to equip the planters with cleaning and grading devices to eliminate all dirt and odd sized grains.

The question as to whether grains of corn at the butts and tips of ears will grow and produce as well as those in the center may be open to argument, but it certainly should be apparent to anyone that these tip and butt grains are of very different sizes and shapes from those in the center of the ear, and that if plates are used which fit the grains from the ear centers they will not fit those from the tips and butts. The sensible thing to do, therefore, is to remove the grains from both ends of the seed ears so as to have the corn as nearly uniform in size and shape as possible and give the machine a fair chance to do a 100 per cent job of planting.

It is also unreasonable to expect a corn planter to measure out hills of



Here's a Well Pulverized Seed Bed with Plenty of Moist Soil—Almost Ideal Conditions for Starting a Good Crop. But, unless the planter is properly looked after and conditions made right to do a 100 per cent job of planting, it is impossible to get the results such a seed bed should give.



Prize Wheat Land Plowed With OilPull

THE sweepstake prize for the best bushel of wheat at the recent Chicago International Stock Show was won by R. O. Wyler of Luseland, Saskatchewan.

Among other important factors in producing this championship wheat Mr. Wyler plowed his land with a 12-20 Rumely OilPull Tractor. He had the advantage of a tractor that is built to highest quality standards—that is a source of power to be implicitly depended upon—that has won the highest honors for fuel economy for many years—that reduces upkeep cost to a remarkably low point—that has an average life of ten years and over. These are important advantages for any farmer.

Mr. Wyler is located in the far North. Yet the experiences he has had with his OilPull are duplicated many times in every section of the country.

We have letters from the North, South, East and West—from farmers—giving their verdict of the OilPull.

Among these letters are some from your section—from home folks. They are well worth reading. They give the verdict of farmers—neighbors. We want you to read these letters. There is no obligation. Merely a note or a post card will bring them and a free copy of our new booklet on Triple Heat Control. Address Dept. AC.

OILPULL

"The Cheapest Farm Power"

ADVANCE-RUMELY

THRESHER CO., Inc., La Porte, Ind.

The Advance-Rumely Line includes kerosene tractors, steam engines, grain and rice threshers, alfalfa and clover hullers and husker-shredders, and motor trucks.

Serviced Through 33 Branch Offices and Warehouses

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Drilling Is Easier than Checking, but It Usually Gives a Smaller Yield Largely Because the Weeds Cannot Be Kept Down by Cultivating Only in One Direction.

corn rapidly and with perfect accuracy, even with grains of even size and shape, when there is a large amount of chaff or other dirt mixed with the corn, yet this is a condition found in a great many seed cans in actual practice.

It pays to test the germinating quality of seed. Everybody admits that, for there is no sense in planting seed which will not grow. But it is no worse to plant dead kernels than to plan a pinch of chaff or dirt. The result is exactly the same in each case, namely, a vacant spot in the field where there should be a healthy stalk of corn with a good ear at the end of the season.

Use Clean Seed. The chaff from the tips of corn kernels, if not removed before the corn is put in the seed can, will interfere considerably with the accuracy of the drop and, of course, reduce the stand. There is no easier

or quicker way of raising many extra bushels of corn than by getting rid of this chaff. It can be removed easily by putting the seed corn in a tub or some other receptacle and stirring it around thoroly and vigorously with a paddle, or by treading it with the feet for several minutes. The loose chaff can then be blown out by running the corn thru a fanning mill, and it is also possible to remove small and cracked kernels at the same time.

With clean, well-graded seed and the right seed plates most any planter will drop the desired number of kernels in every hill, and then, if the seed bed is in proper condition and the germinating qualities of the seed around 100 per cent, everything possible has been done toward obtaining a perfect stand and a maximum yield.

But there is another point which must

be kept in mind when the planting is done in check-rows, as in planting corn: the checking must be quite accurate or there will be considerable damage to the crop when it is cultivated cross-wise and thus the good results from proper care in other respects may be largely undone.

The accuracy of cross-checking depends upon the setting of the check-wire and upon the adjustment of the boot. Complete instructions for obtaining accurate cross-checking are usually furnished in the instruction book which the purchaser should get with every machine. If any trouble is encountered in getting a good check these instructions should be carefully read and followed out. They will vary somewhat with different makes of machines, of course, but in general the two things necessary to have a perfect check are the proper tension on the check-wire and drawing it a uniform tension each time at the end of the field opposite the starting point, and the correct position of the boot with relation to the buttons on the wire.

Markers or guide stakes should be used for setting the anchor posts at one end of the field only. The other end will take care of itself if the wire is drawn to the proper tension each time. It does not need to be drawn very tight, but it is important to draw it to about the same tension each time. Many anchor posts are equipped with a spring and this makes it easy to get almost exactly the same tension each time by observing the amount the spring is compressed. Leave room at each end of the field for four rows. These can then be planted in one round trip. By leaving this space at each end, straining of the wire by driving too close to the anchor stakes is avoided.

Even tho the wire may be set just right, if the boot is adjusted so the hill is dropped either just ahead of or just behind the button, the checking will be poor because any deviation of this kind is doubled in the cross rows, since it will be on opposite sides of the button each alternate trip across the field. The position of the boot should be adjusted as closely as possible before starting planting, and carefully checked up after two or three rounds are made. Care should be taken to use the same length of your straps and traces after this adjustment is once obtained. If it becomes necessary to change horses before the planting is finished it may be found that the setting of the boot will need another adjustment because of the difference in the height of the horses.

It should not be necessary to call the attention of any farmer to the fact that planters need lubrication the same as any other machine. Many a poor stand can be traced to the lack of lubrication.

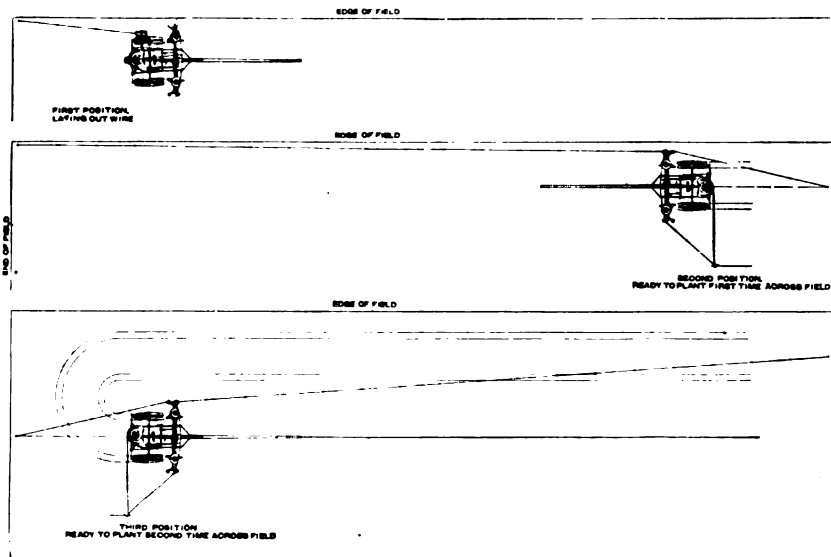


Diagram Showing How to Plant with a Two-Row Machine.



MULE-HIDE represents the most economical roofing used on farm buildings. Per year of service MULE-HIDE costs less than any other roofing made because it gives more years of protection.

There is a MULE-HIDE roof for every purpose. Smooth Finish Roofing for sheds, chicken coops and other smaller buildings—MULE-HIDE Slate Kote Roofing and Slate Kote Shingles for barns and residences.

Write for illustrated and descriptive literature. Dept. F. M.

THE LEHON CO.
44th to 45th Street on Oakley Avenue
CHICAGO ILLINOIS

"Not a kick in a million feet"

Modern Equipment Means Health

Comforts and Conveniences That Electricity Brings to the Howland Home
More Than Pay in Happiness

By F. J. St. JOHN

"BUSTER" likes his bathtub; Grandma Howland likes all the conveniences, plumbing and electrical, that the Howland home affords—and so do all the Howlands and there is a fine family of them.

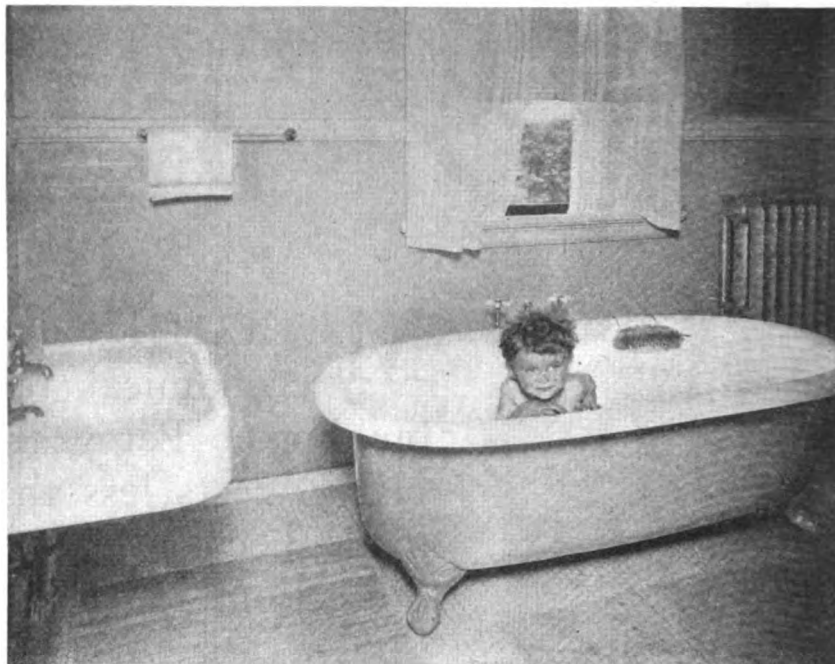
This home, by the way, standing there on an attractive site some three or four miles out of Kalamazoo, Michigan, presents some interesting features—features not apparent to the casual observer.

That's true, as anybody knows, of many homes that you'll pass here and there. You look them over with little interest because, from the outside, there is nothing to indicate that they are different from the ordinary run of homes. Get behind the outward, general aspect of one of these, however, and you will find that somebody, sometime, put into that home a bit of character, of individuality. They put a little of themselves into it and henceforth it stood out as a home, never to be classed as just a house again.

And so with this Howland home. In the first place H. H. Howland, the man who stands on the veranda with his family around him, built this house. That is his business by the way—building houses. And the corner where this house stands, four miles from the city, a few years ago was a part of a 20-acre farm. Howland conceived the idea that this farm could grow something besides the farm products classed as such by government statisticians. He decided it should grow houses. But that is just a little ahead of the story, perhaps.

His first conception, let us say, was the house you see in the picture. Outwardly it is an attractive, moderate-priced house. Howland was building his own house, for a home. Naturally he and good Mrs. Howland were interested in what was to go on the inside. They were strong for modern conveniences. But they were far beyond the city limits and the electric services and city water system that would give them the conveniences they desired.

They found a way to get the service they wanted, in a small unit electric plant which they purchased from a dealer in Kalamazoo. The house and garage were wired during the process of construction, a concrete base of proper proportions was built in a corner of the basement and, in due time, the plant was installed and connected



"Buster" Certainly Does Like the Bath Tub, as Will Be Seen by this Picture.

up. Also, while the buildings were going up, a very complete system of plumbing was installed. On the second floor provision was made for a roomy bathroom, tub, toilet and lavatory. Down in the kitchen three waters, hot and cold soft water and cold well water were run to a fine big sink, which was carefully set at just the height which would be most comfortable for Mrs. Howland when she stood at her work in front of it.

In this house a good washroom or laundry was planned just off the kitchen instead of in the basement. Here are three convenient laundry tubs, with room at one end for the electric washer. Beyond the tubs Mrs. Howland or one of the Howland daughters is wont to set up the ironing board on ironing day. There is a handy wall plug provided here for connecting up the electric flat iron, for of course all ironing is done with electricity from the electric plant.

You have been wondering, perhaps, about the running water at Howlands. This is secured by the use of two electric pressure water systems, one for the soft water and one that pumps water from the well. These are small systems, each with a capacity of from 250 to 300 gallons of water per hour. The water is stored in pressure tanks, under from 40 to 60 pounds pressure. That

means that when a faucet is opened water rushes out in a plentiful supply, whatever the purpose. There is force enough, with one of these systems, to throw a good stream of water over the house, thus giving considerable protection from fire.

The systems are automatic in operation. When a faucet is opened and the pressure goes down to a certain point, the pump starts automatically and runs until the faucet is shut off and the pressure is again built up to where it should be. Then the electric circuit is broken and the pump stops.

It is not easy to put down in cold type the tremendous saving realized from having running water in the house. Only those who have tried both ways fully appreciate the saving that lies in having water under pressure, right there at the kitchen sink, in not having to go out on a windy porch or maybe down in the yard, to pump and carry in a bucket of water, many times a day; then the saving, and more than saving in having a warm, comfortable bathroom and toilet in the house. It goes without saying that the modern bathroom impels more frequent bathing and consequent better health. "Buster," who was disturbed in one of his aquatic revels when the picture was made, would lend his support to this proposition if

1

The rigid frame 7" rolled steel—allows easy inspection of all tractor parts.

2

Extra rigidity between engine and frame—engine anchored by six steel bolts passing entirely through 7" steel channel frame.

3

Cast iron radiator—tubular copper core. Quick cleaning—durable.

4

Front axle heavier, stronger, more flexible in movements.

5

Improved rear axle bearings—larger end thrust surfaces. Bearing bored eccentric securing perfect meshing of driving gears.

22

Tractor weight reduced; stronger, more durable construction throughout; improved materials, manufacturing facilities and workmanship.

21

Internal gears on drive wheels better protected; drive wheels adapted for multiple lug arrangement to suit all kinds of soil.

20

Large, roomy platform; ample leg room when seated; plenty of space to move about.

19

Simplified fuel pipe line construction and improved two compartment fuel tank of 23-gallon capacity.

18

More compact, redesigned transmission case—quick inspection and adjustment.

17

Simplified, more efficient kerosene shut with quick detachable copper pipes. Improved exhaust manifold.

16

Improved vanadium steel exhaust valve springs—the last word in exhaust valve spring construction.

15

Push rod and rocker arm assembly enclosed—protected from dirt, simplified, quick adjustments.

14

Motor completely enclosed—only one minute required to remove enclosure for motor adjustments.

13

Improved automatic throttle action—extra durable construction of parts and connections.

12

Improved intermediate bearing added to differential shaft, assuring additional rigidity.

8

Improved water pump, fan shaft and friction pulley—adjustments simplified.

9

Gear shift simplified—positive, quick action. Rigid support for lever.

10

Entire clutch mechanism improved and simplified.

11

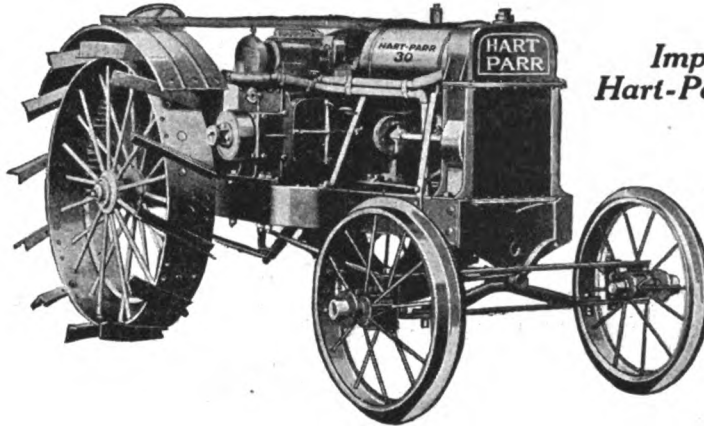
Improved centrifugal governor accurately controls engine speed—operates in bath of oil.

6

All bearings not lubricated by force feed have Alemite Grease Gun fittings. Hand oils eliminated.

7

Steering assembly improved and strengthened—quicker and easier steering.



Improved Hart-Parr "30"

A Stronger, More Rigid Frame Another of the 22 Improvements

The new rolled steel frame, one of the 22 improvements—now makes the Hart-Parr unsurpassed for efficiency, strength and durability. This new frame is made from 7 inch rolled channel steel. The entire load rests on the channel flanges, affording a firm, rigid support for the engine and transmission units. The material and construction of the Hart-Parr frame insures smoother operation and permanent alignment, built to withstand twisting strains. The special construction of the new frame permits easy, instant inspection of all tractor parts.



The new Hart-Parr frame is only one of the 22 improvements briefly described here. These improvements, based upon our accumulated experience of 22 years, form a real advance in tractor construction. Added to the long-established superiority of the Hart-Parr, they place this tractor, with its economical kerosene-burning, surplus-powered motor, in the forefront for 1923. The Hart-Parr is sure to attract the most favorable attention from careful farmer-buyers. Wise dealers who want to protect their profits will investigate the Hart-Parr—the standard of tractor comparison.

Write us for detailed information about the Hart-Parr line and these 22 major improvements—get the facts about our improved dealer's franchise. Match your money and experience with nothing less than the Hart-Parr standard. Write today!

HART-PARR COMPANY

708 Lawler Street

Charles City, Iowa



it were put to him in language which he could comprehend. And the protection of that indoor toilet to all the family during the seasons of sleet and snow and wintry storms will be readily understood and appreciated by everybody.

There is a good-sized truck patch and a vegetable garden on the Howland holdings. Water under pressure means that water can be squirted to a considerable distance thru a garden hose. The result is that the growing green things receive many a good shower from the spray nozzle of that garden hose in the hands of one of the Howland boys, instead of from a gray raincloud, after the fashion in which Mother Nature usually provides her rains. A further result is that the Howland table is always well supplied with seasonable green stuff, no difference what summer droughts may come.

We remarked before that it is not easy to put into cold type any adequate description of the benefits of running water for the home. The same thing can be said regarding the whole electric service in the Howland home. One point should be noted. It is a large family, the Howlands. There is a delightful group of children there. And a young married daughter, mother of "Buster," living nearby, with her own little family, is frequently welcomed back into the home nest and into the happy



And Sister Likes the Electric Light on Each Side of the Chiffonier in Her Room.

family circle. They are a happy bunch there at the Howlands. Under ordinary conditions all the babies and the half-grown youngsters would create demands upon the grownups which would tie their hands constantly to some task or other.

The modern conveniences and the big, comfortably arranged home, however, make light work for those who labor there and make Joy, rather than Sorrow, the presiding genius of that home circle.

But as intimated a while ago, the concerns of this family are only a part of the story. Howland, you will remember, determined that this farm should grow something besides ordinary farm products. It should grow houses, he decided. And houses it has grown.

With his natural appreciation of the benefits of modern conveniences, he determined that these homes should be modern. They must be made modern, of course, in the same way as his own. So as he built his houses, Howland bought more electric plants and installed one in each home. Each man who bought one of the Howland homes and settled down to be a neighbor to Howland, found his own electric plant and running water equipment right along with the property and started right in to enjoying the benefits of modern conveniences from the beginning.

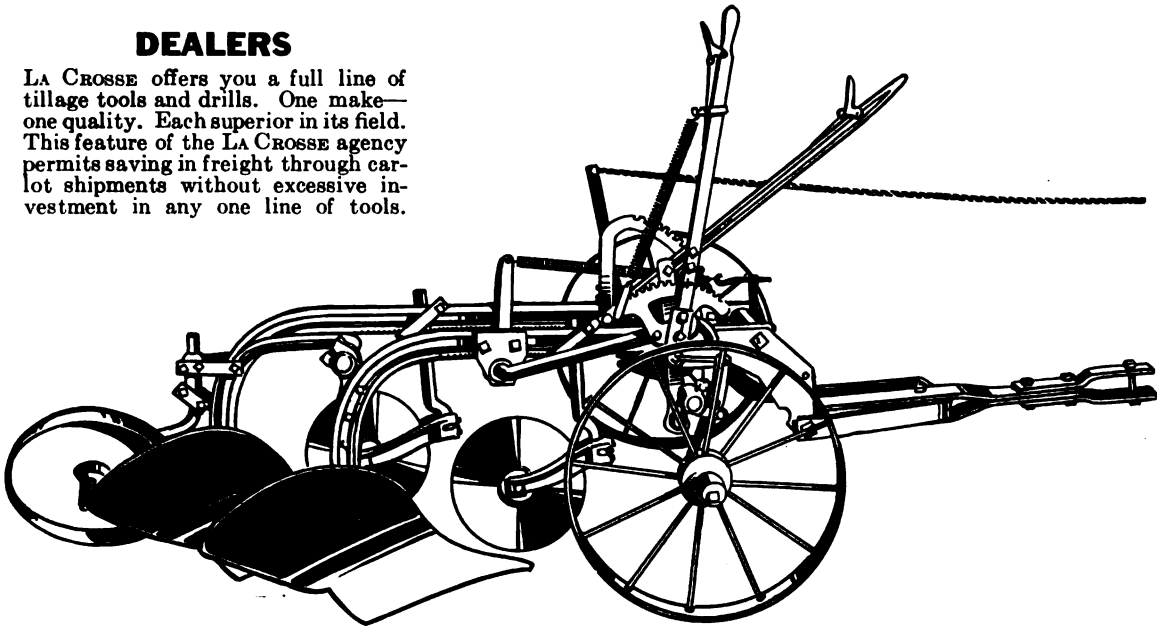
The plan has succeeded, for on How-



The Fine Home H. H. Howland Built on His Farm Near Kalamazoo, Mich. Others liked it so well that they have erected similar homes and have installed all the conveniences of the city—electric light and power and water pressure systems.

DEALERS

LA CROSSE offers you a full line of tillage tools and drills. One make—one quality. Each superior in its field. This feature of the LA CROSSE agency permits saving in freight through carlot shipments without excessive investment in any one line of tools.



In The Field

These 6 Features Give You a Better Job of Plowing With Less Trouble to the Operator

Note the Following Exclusive Features :

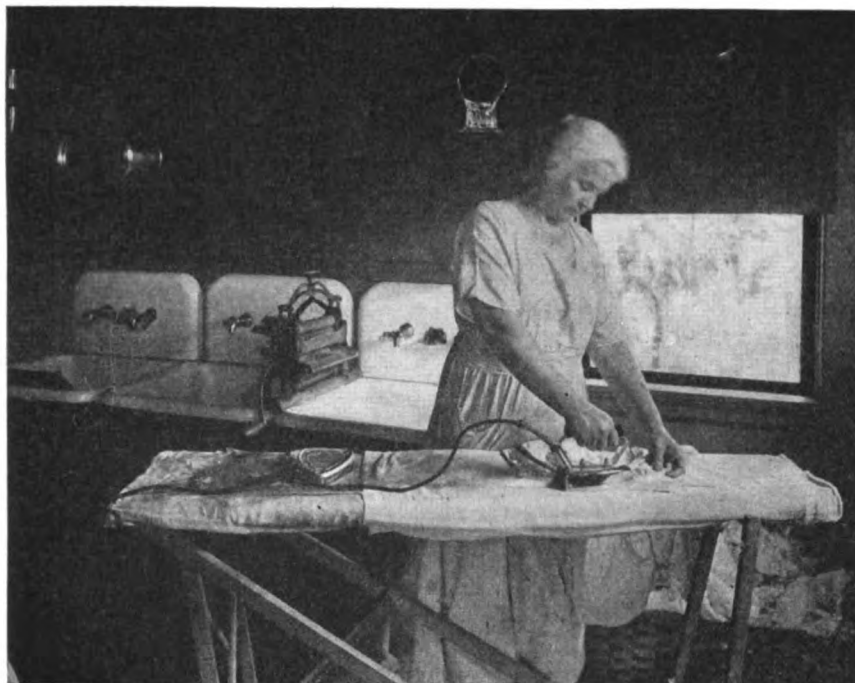
- 1** Plow is adjustable to cut 10, 12 or 14 inch furrows.
- 2** Allows adjustments to varying soil conditions, eliminates loss of time and undue strain on equipment.
- 3** Hand lift device enables operator to lift plow to full height when tractor is not in motion; thus clearing the ground about 9 inches and insuring against stalling tractor when plowing in wet and heavy soil.
- 4** Adjustable rear wheel throws weight of plow and pressure of furrow slice on wheel rather than on landside, insuring light draft and uniform furrows.
- 5** Depth and leveling levers are within easy reach of operator. Not necessary to get off the seat to make either adjustment.
- 6** Special design flexible hitch keeps plow in uniform depth even when traveling over uneven ground.

POWER LIFT—Positive and Quick Acting
WEIGHT—700 Pounds
CONSTRUCTION—Substantial Yet Light in Draft

LA CROSSE **NO. 12**

The lighter running, easier operated, better controlled plow for use with FORDSON and other light tractors. Made by

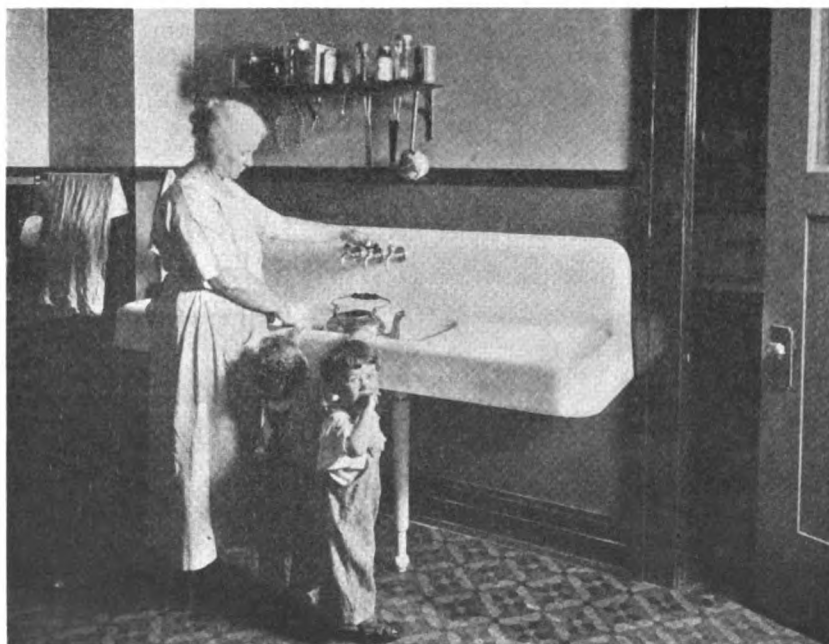
LA CROSSE PLOW CO., La Crosse, Wis.
"MAKERS OF LIGHT DRAFT PLOWS"



Grandma Doesn't Mind the Ironing as She Has an Electric Iron.

land's farm fourteen modern homes have grown, to date, and there are others in prospect. They make a pretty good crop, Howland declares, and to one looking them over casually, it appears that he is right. For here are fourteen families forming a compact, happy little community, a real community because they have many interests in common, and happy because they are caring for those interests sanely and sensibly and because they themselves are living in real homes, each family circle enjoying the blessings and the comforts that contribute so much, today, to the family life.

Don't misunderstand us. We would not say for a moment that families that lived under the pioneer conditions of years gone by were not happy. Bless your heart, no! We have personal memories of a great old farmhouse living room, with a mantel so high that I never saw the top of it save when hoisted to some accommodating shoulder, with a fireplace that took a four-foot backlog, and with a great-throated chimney rising above it, plenty big enough to permit the descent of the most plethoric Santa Claus that ever taxied thru the sky behind a team of phantom reindeer.



The Kitchen of the Howland Home Has Water Right Where It Is Needed.

Them were the happy days—sure! And the joys pictured in memory that cluster round old days and nights on the farm are not a bit overdrawn. But here's the funny thing about that. While we were enjoying those comparatively primitive pleasures, our neighbors, in the next house, and the next and the next, enjoyed the same degree of comfort, the same sort of pleasure as ourselves. And those were the best that rural life afforded, in those days. But those pleasures were tempered by certain hardships, hardships that were recognized in a greater or less degree, passed over because there was no way to eliminate them—and still stay on the farm.

Today, with the aid of electricity, we can eliminate those drawbacks and hardships. Today, while there is no pleasure of the old days that cannot be enjoyed, unless it may be the extravagant pleasure of four-foot backlogs and log fires, there is no hardship of the old days so far as the home itself is concerned that cannot be gotten rid of, and in its place will come a modern comfort and convenience, such as electric lights, electric power, running water or some other accomplishment of modern invention.

"Buster," who revels frequently and unrestrainedly in Grandma's bathtub, will probably never know the drawbacks of a Saturday night bath in a tin tub in the kitchen. There are a lot of the drawbacks of life without conveniences which the Howland young folks very likely will never know about. Consequently they perhaps will never know how vastly superior the modern features of their home make it, as compared with the home in which these features are lacking. But they enjoy these modern features just the same because they bring health, comfort, freedom from troublesome chores and a sense of satisfaction in the fact of possession, and all these certainly make their conveniences worth while.

There are several million farm families in this country, however, who do know what drawbacks farm home life offers without these conveniences, or, better, who have yet to experience, for themselves, the benefits of modern conveniences as afforded by electricity and running water. They are going to know these benefits, tho. They are coming rapidly to understand that any farm home can have these benefits. Their neighbors already are enjoying these modern conveniences and they themselves are bound to conclude after a brief investigation that what is serving their neighbors so splendidly certainly has something to offer them.



IF you can't "come out of the kitchen," make it a place you want to stay in.

Fordson will do all these at a lever's touch!

The Fordson at Work

Unlimited Uses for the Fordson

*Indicates Belt Uses

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| Alfalfa Cutting | Land Clearing |
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| Binder Hauling | Land Rolling |
| Building Moving | Levee Building |
| Canal Boat Hauling | *Lighting Plant Operation |
| *Churning | Lime Spreading |
| *Cider Press Operation | Log Hauling |
| *Clover Hulling | *Machine Shop Power |
| Combination Harvester Hauling | Manure Spreading |
| *Concrete Mixing | *Merry-go-Round Operation |
| Corn Cutting | *Milk Machine Operation |
| Corn Listing | Mowing |
| Corn Loading | *Oil Well Drilling |
| *Corn Shelling | *Peanut Blancher Operation |
| *Corn Shredding | Peanut Digging |
| *Cotton Ginning | *Pile Driver Operation |
| *Cream Separator Operation | *Planing Mill Power Plant |
| Cultivating Corn | Plowing |
| Cultivating Sugar Beets | Post Pulling |
| Cultivating Sugar Cane | Potato Digging |
| Cultivating Orchards | Potato Planting |
| Cultivating Vineyards | *Printing Press Power Plant |
| Dilting | Produce Hauling |
| Discing | Pulverizing |
| Ditching | *Pumping Oil |
| *Drainage Pump Operation | *Pumping Water |
| *Ensilage Cutting | *Quarrying |
| Excavation Work | Raking |
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| Fence Stretching | Road Sprinkling |
| *Ferris Wheel Operation | *Rock Crushing |
| Fertilizer Spreading | Rock Dragging |
| Freight Car Towing | *Rock Drilling |
| *Grist Mill Operation | Sand Loading |
| Harrowing | Saw Mill Operation |
| Hauling (General) | Seeding |
| *Hay Baling | *Sheep Shearing Equipment |
| Hay Loading | *Silo Filling |
| Hay Raking | Snow Plowing |
| Hay Sling Operation | *Spraying |
| Hay Tedding | Street Cleaning Equipment Hauling |
| Hedge Pulling | Stamp Pulling |
| *Hoisting | Sub Soiling |
| *Ice Conveyor Operation | Terracing |
| *Ice Cream Plant Operation | *Threshing Grains |
| Ice Cutting | *Threshing Rice |
| Ice Hauling | Wagon Hauling |
| Industrial Locomotive | *Washing Machine Operation |
| *Irrigation Pump Operation | *Well Drilling |
| | *Wood Sawing |

JOHN BORNMAN & SON, DETROIT

FORD FORM 3496-900M



Take a page from Ford's own book! Take it to heart, and keep your Fordson at work—you'll never reach the end of its usefulness!

Put on a Smith Unit—and you can switch from field work to belt power *instantly!* Can't throw oil. Back Fordson into belt *under its own power.* Pull the lever—and your machinery hums!

Safe—simple—removes the last argument of the higher priced tractor.

Write for particulars and prices, mentioning nearest Fordson dealer.



Sold only through authorized Fordson dealers.

DALLMANN MACHINE & MFG. CO.

920-936 Winnebago Street

Milwaukee, Wisconsin

SMITH UNIT

PULLEY-CLUTCH
for Fordsons



Letters Home From College

Bill Gives His Father Some Idea of What Farmers Owe to Agricultural College Men and Some of the Facts They Have Uncovered About Sheep Raising

DEAR DAD: A fellow here at school visited the International Livestock Exposition at Chicago last December and came back all enthused about what he saw and what he learned. Several of us who are interested in livestock of all kinds have spent a number of interesting and instructive evenings with him, and second-hand, have absorbed a lot of the things he found out at Chicago. One of these bits of information was secured from an exhibitor of sheep. This man told my friend that he had topped the Chicago market with lambs last year and was good enough to give some pointers on how he did it. But what was most impressive was the fact that there is a big profit in lambs. When you can get 14, 15 and 16 cents a pound live weight for lambs five or six months old, it pays to care for the ewes and lambs in the manner most approved by the buyers.

All of this came back to me the other day when I was listening to an instructor in the animal husbandry department give a lecture on the care of ewes before lambing time and when the lambs come. Also what the shepherd can do for the lambs to start them along in the best condition for a healthy, rapid growth. I'm going to tell you some of the ideas I got from this lecture, thinking that at just this season it may help you with our flock, even tho it is not so very large.

Proper housing, care and feeding are the three things that pregnant ewes need during the winter to put them in a condition to have strong, healthy

lambs. The sheep barn or shed for the ewes during bad weather ought to have a dry floor, with plenty of bedding. The roof should be weather-tight, and the walls of materials that will prevent drafts. At the same time it should be well ventilated and constructed so as to admit plenty of light. The feed needs to be succulent, composed of a combination of alfalfa or clover and corn silage and roots. Timothy hay is not good for sheep, as it impacts in the bowels and causes constipation. If the ewes are due to lamb before the pastures are ready, they should be given some grain for the month previous to the arrival of the lambs. Wheat bran and oats, either half and half or two parts of oats to one of bran is a good mixture. Half a pound a day for each ewe is about the right ration.

Whenever the weather is suitable the ewes are permitted to get out and exercise. Some shepherds get them to exercise by placing the feed racks some distance from the shelter. Exercise makes it easier for the ewes to deliver their lambs and insures stronger lambs.

When the lambs begin to arrive then the shepherd's work begins. Some ewes won't own their lambs; the udders of others have become so matted with wool that the lamb cannot get to the teats. Or perhaps the wax in the end of the teats needs to be squeezed out. Milking the ewe that will not own her lamb and feeding the milk to the lamb for three or four days, and keeping the two penned up together

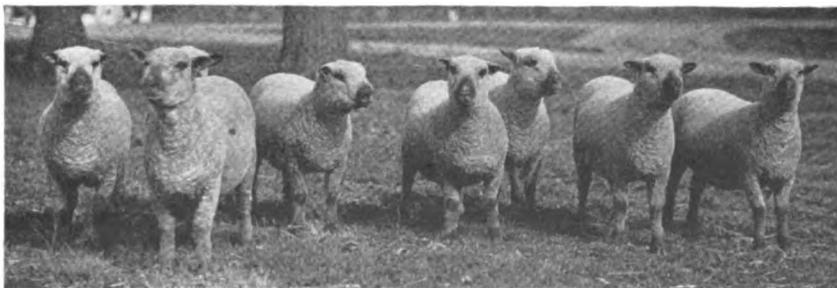
will solve the unnatural mother problem. Clipping the wool away from the udder and teats will solve the other.

Close watch of the ewes as the lambs arrive means profit for the flock owner, for oftentimes a lamb apparently born dead may be saved, or a lamb that becomes chilled warmed into life and health. Very often those lambs that apparently are dead may be saved by clearing their mouths of phlegm and blowing into their mouths and beating them about the heart to start lung action. Chilled lambs may be revived by putting them in buckets of hot water clear up to the head for about five minutes and then drying them and leaving them in the warmth of a stove until they have regained their strength.

When the mother of twin lambs has not enough milk for both of them, one may be adopted by a step-mother. This is accomplished by skinning the mother's own dead lamb and wrapping the skin about one of the twins for 48 hours. After the milk has freely circulated thru the adopted lamb, the step-mother will own it. Ewes that are heavy milkers and have more than the lamb or lambs need should be watched, and the udder milked out so that it will not spoil. Ewes that have quantities of milk should not be fed grain for three days before lambing, as they are very apt to have milk fever.

All male lambs, unless they be pure-breds and are wanted as breeders, should be castrated and docked. The former operation is performed from a week to two weeks after birth. The docking should be done a week later. Both operations are simple to those who understand them and have had experience. If the flock owner has not performed the operations he should get some one who does know how to do it.

The best time to market lambs is when they are four to five months old and just before they are weaned, as then they have the milk fat on them. Early lambs will thus be ready for market before the big supply is sent in, and will be sold before the heat of



Lambs Respond to Good Care with Rapid Growth, Which Means an Early Market and High Prices.



The Steel That the New York Central Lines Know Is Strong Enough to Carry Their Fast Heavy Trains

PRACTICAL farmers who know the requirements of the crawler type of tractor have asked us, "How strong is the steel you use in Rigid Rail Tracks?"

There is your answer. We are making manganese steel frogs for the New York Central Railway, the same high quality steel goes into all Rigid Rail Tracks for American Farmers.

Tons and tons of massive steel hurtling at terrific speed over these frogs fail to wear them down. Is the steel of your tractor ever put to such a test?

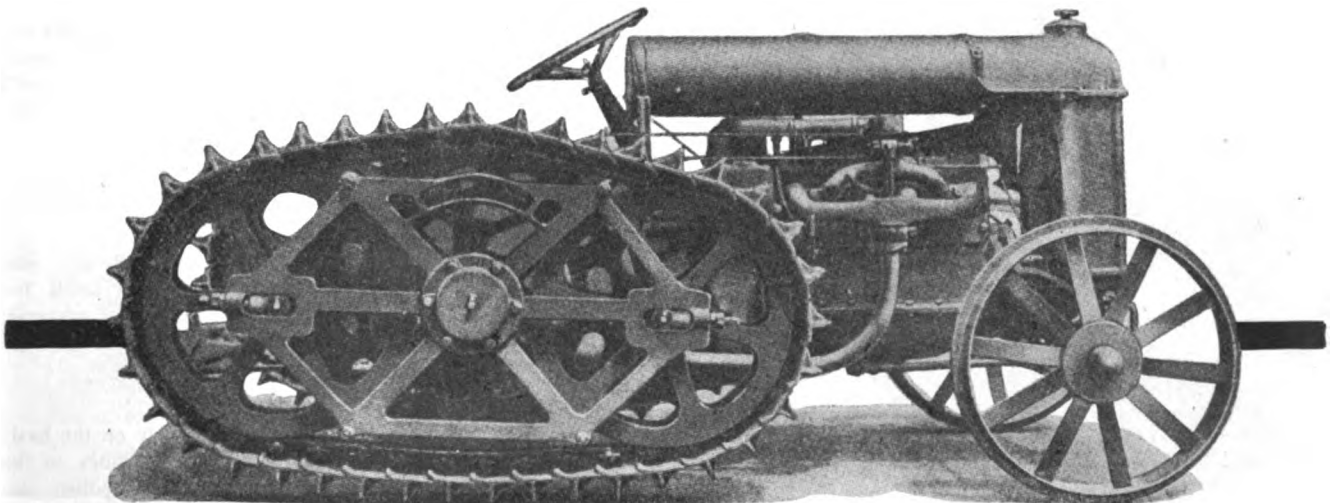
500 lbs. manganese steel in each set of these tracks and 900 lbs. high carbon steel, insures life and service.

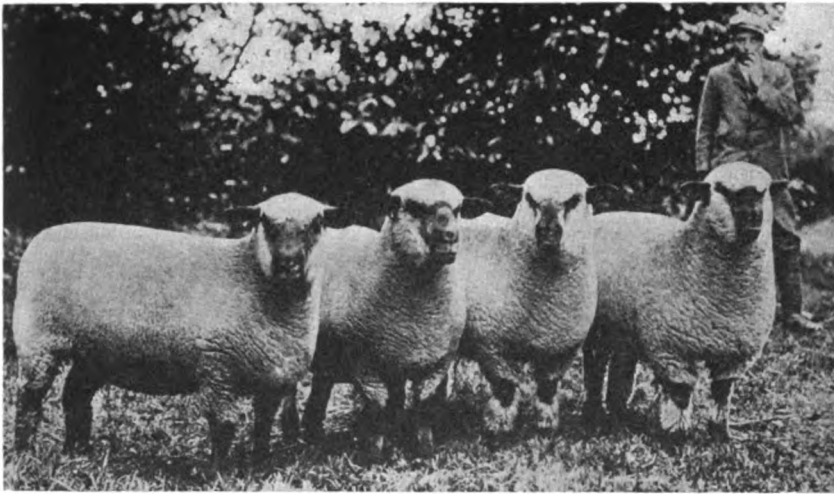
Rigid Rail Tracks will increase the drawbar pull of your Fordson to over 3,000 lbs. This means higher operating efficiency of 35%.

With these tracks the Fordson will turn shorter under load; it is made lower, narrower and more powerful.

HADFIELD-PENFIELD STEEL CO.

BUCYRUS, OHIO





Two Generations of Pure-Bred Shropshires. Pure-Breds Are Profitable.

summer has decreased their weight. Also they are less liable to be troubled with stomach worms. In addition to the milk of their mothers, lambs that are to be sold on an early market should be fed some extra grain. A good ration is composed of two parts of wheat bran, one part of oats and one part of finely ground cornmeal and one-half part of oilmeal. Alfalfa or clover should be fed with this ration, which often may be started two weeks after the lamb is born. These rations should be fed in creeps, to keep the older sheep from crowding out the lambs.

There, dad, I have quoted or rather told in my own words the substance of the instruction the animal husbandry man gave us on care of the flock at lambing time. While I have not attempted to go into much detail, the principles are there and if one will take them and mix in a little of his own good judgment he will have greater success with the farm flock.

Both wool and lambs have com-

manded exceptionally good prices during the last several months, especially that wool that has come from sheep that have had intelligent care and those lambs that have been properly prepared for market. Wool from sheep that are infested with lice and ticks and that have not been properly fed, of course, does not get as good grade as that from clean, well-fed sheep.

To keep the flock free from ticks and lice, the good shepherd dips his flock every year. This is usually done about two weeks after shearing. A bright, warm morning is selected and the sheep are dipped in water to which has been added the proper amount of any of the recognized good sheep dips. Warmth is necessary to permit the sheep to dry, and the early morning chosen so that they will be free from moisture before the chill night air hits them.

That's all the lecture I'm going to give you in this letter. But I know that you like them. That's the advantage of

having a son in agricultural college—he can tell his dad a lot of things that dad didn't have a chance to learn when he was a youngster. There's a feeling among a lot of the boys here that their fathers don't want them to go home and display what they've learned. They feel that their fathers will resent any interference with their established methods of doing things on the home place. I don't believe that. Most fathers are proud of their sons, and are just as proud of the fact that they are able to give them advantages that they, themselves, did not have. At least they ought to be.

Here I am getting to be a regular preacher, but I don't mean it that way. I am here to get all the knowledge I can, for I know how much my education is costing, and I want the investment to pay dividends thru me in the years to come.

It seems a long time since the Christmas, holidays, but it's only about six weeks. They keep up hustling here, especially during the weeks in winter when they have the short courses for the boys and even the boys' fathers, who, of course, can't afford to stay away from the farm for any great length of time. So they crowd a lot into a few short weeks. The short courses in tractor operation and care that the Farm Mechanics department holds is drawing a greater and greater attendance every year, as tractor owners are coming to realize that knowing the tractor is a mighty good investment.

Those cans of fruit that mother gave me to bring back with me are about gone. You might drop a hint to that effect where it will do the most good. They help out the boarding house fare a whole lot. Seems as tho I'm always hungry. Have at least one letter every week from Evelyn, and sometimes two of them. She gives me all the news about the neighbors at home, especially those who have packed up and gone away. They'll find out their mistake in time.

Now that it's getting along toward spring I feel that I ought to be home helping you. However, I guess you'll be able to worry along for awhile without

Your loving son,

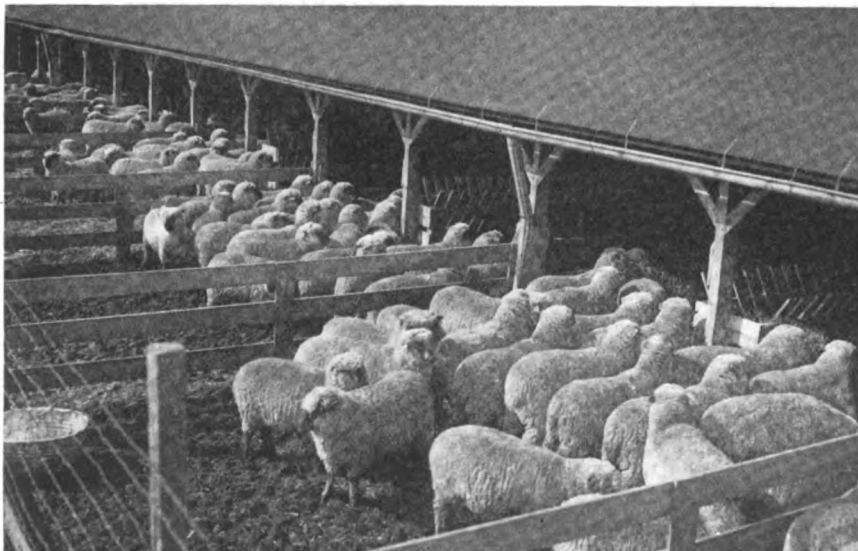
BILL



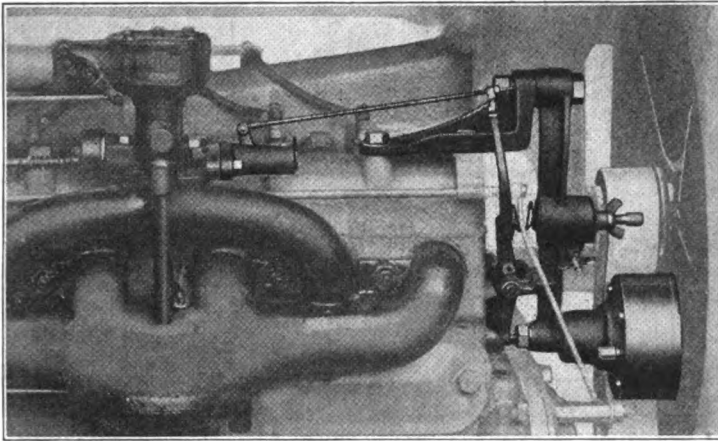
A COW pays well for good care. She does her best when her needs for plenty of water, air, and feed are met, and when her bodily comfort is considered.



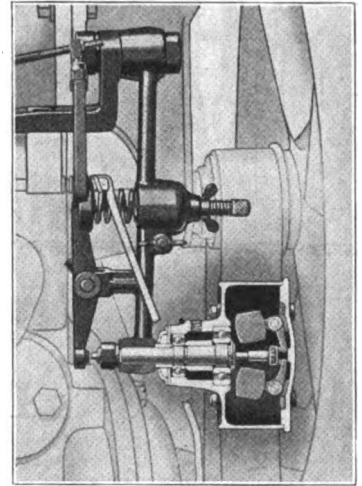
BUYING seed oats solely on the basis of looks is like buying shoes on the same basis, and nice shiny polish can cover up a lot of pasteboard and split leather.



Sheep Need to Have Access to Sheds When the Weather Is Bad.



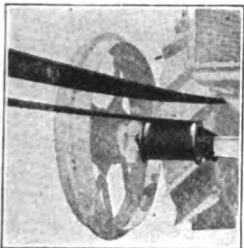
WEHR THROTTLING GOVERNOR is designed especially for the Fordson Tractor. Most effective Governor on the market. It is a real engineering achievement. It will effect a surprising fuel economy and maintain a steady flow of power from the motor regardless of road variation. Flyball type operating on the same principle as the governor on a steam engine. Also acts as a belt tightener. Strong tension tightens the belt and prevents slippage. Thus motor will not over-heat. The illustration above shows Model "B" Wehr Governor for use on new style Fordson Manifold. Order Model "F" for old style Fordson Manifold.



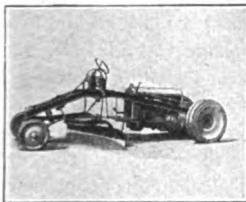
Note oversized high grade ball bearings. Also simplicity of design.



Wehr Brake



Belt Roller



One-Man Power Grader



Road Maintainer

Every Fordson Owner Has Need for These Wehr Products

FORD dealers have found that it pays to keep Wehr equipment for the Fordson Tractor in stock. This is especially true during the season the Fordson is being used so generally for belt work.

The Wehr Throttling Governor designed especially for the Fordson Tractor and the Wehr Belt Roller for the Fordson are everyday necessities on belt work. Fordson owners prefer them. Dealers find them easiest to sell.

Wehr One-Man Power Grader

— a combination two-purpose machine for grading and maintaining roads in summer and clearing streets and highways of snow in winter.

One man can operate it at will. The tractor and grader are quickly converted into a complete one-man outfit without drilling a single hole. The blade can be raised, lowered or swung to either side or angle under perfect control of the operator. Fordson Clutch and gears are manipulated from the operator's platform. Every road contractor, county commissioner, city and township official is interested.

The lowest priced and most useful outfit of the kind on the market.

Road Maintainer

The Fordson and the Wehr Road Maintainer make a combined outfit which will cut and level any 8-foot strip of road at regular tractor speed. Easy to attach. No holes to drill. Operator has complete control of the cutting blade which he can raise or lower at will. Forward blade for cutting; rear blade for

leveling and smoothing. Back the tractor in the frame, make connections by only three bolts and it is ready for work.

The New Wehr Belt Roller

Useful on all Fordson Belt operations. Lengthens life of the belt.

Easily attached to front axle by simply hooking over top of front axle. Roller is 8" long, 5" in diameter with flanged ends equipped with removable bronze bearings. A big husky oversized roller that will last life of tractor.

New Wehr Brake

for controlling the Fordson on hills or on an incline where a quick, positive stop must be made. Also useful on road work. Does not reduce road clearance or increase length. Controlled by hand lever in easy reach of operator. A special automatic hitch coupler is used on the new industrial Brake. Brake furnished with plain draw bar cap is recommended for general farm use.

Extension Angle Iron Cleats

give additional traction under adverse soil conditions. Made of heavy angle iron extending outward 8" from the rim of the wheel. Fastened to the regular cleats on the Fordson wheel with two bolts. Seven cleats for each wheel. These cleats can be used on both wheels when plowing.

Other Wehr Products

The Wehr line covers the field of Fordson tractor specialties which are used every day in field and belt operations. Wehr Muffler, Clutch Lock and Spring Seat complete—the most salable line of Fordson Tractor necessities. Literature on request.

WEHR COMPANY

563 Thirtieth Street

MILWAUKEE

WISCONSIN



Clean Grain Pays the Grower

By ROBERT H. BLACK

WHEAT is the principal small grain crop which the farmers of the Central Northwest can quickly and conveniently convert into cash at any time during the year.

The price which a farmer receives for his wheat is dependent primarily upon the world supply and demand; and the net financial gain or loss to the farmer who raises wheat depends largely upon the cost of production.

The states of Minnesota, North Dakota and South Dakota face a serious problem at the present time in regard to the growing of spring wheat. Records secured by the United States Department of Agriculture in 1919 indicate that the cost of production per acre in the winter wheat section was 24.5 per cent greater for winter wheat than for spring wheat in the spring wheat section, but that on a bushel basis the cost per bushel of producing spring wheat was 41.7 per cent higher than for winter wheat. The elements of cost considered in securing these

figures include every operation from the preparation of the soil and seeding to the threshing and marketing of the wheat. The higher cost per acre of producing winter wheat is due to the higher cost of winter wheat lands and the added expenses of handling a larger yield of the grain per acre. The higher cost for spring wheat per bushel is due to the relatively small yield of grain per acre as compared with the yield of winter wheat; and also because a large crop of dockage is grown and threshed with nearly every bushel of spring wheat.

The cost of production involved in the growing of large amounts of dockage with the wheat is of considerable economic importance.

Cost of Producing Dockage

The cost of producing this dockage greatly decreases, and in some cases entirely destroys, the profit which the spring wheat farmer might otherwise make. Because the terminal market value of this

dockage is sometimes less than the cost of handling, cleaning and freight, the farmer receives no payment for the dockage portion of his crop when the wheat in the dirt is sold on the market; and, in addition, a further discount is often assessed against the wheat portion of the crop because of such foreign material as cockle, rye, barley, vetch and kingheads in the wheat.

Samples of the 1922 spring wheat crop were secured from threshing machines located in central, western and northwestern Minnesota, northeastern South Dakota, southeastern, eastern, northwestern and central North Dakota. The average dockage of all these samples which fairly represent the bulk of the spring wheat crop for this area was found to be 13.1 per cent.

Assuming that the cost of producing spring wheat in 1922 was the same as the average cost of producing spring wheat in North Dakota in 1921 (which was \$12.94 per acre), the cost of producing the dockage on the average crop of spring wheat in 1922 was 13.1 per cent of \$12.94, or \$1.69. On the average quarter section (160 acres) of wheat, the cost of producing dockage was \$271.32. In 1922, 18,639,000 acres were devoted to the growing of spring wheat. On the basis of \$1.69 for the dockage share of the cost per acre, spring wheat growers expended \$31,509,910 to produce their 1922 dockage crop.

This \$31,509,910 takes into consideration only 13.1 per cent (the dockage share of the cost of production) of the actual expenses incurred in the production of spring wheat in 1922.

How Can the Farmer be Reimbursed?

There are many disadvantages connected with the marketing of wheat containing dockage, some of which were enumerated in the 1921 report, but the one problem for which a solution is presented in this report is "After producing this dockage, how can the spring wheat



A Field of Oats Such as This Yields a Profit, as the Same Amount of Labor Produces a Bumper Yield.

NO-LEAK-O

Piston Rings



Save You Gas

Every gallon of gas you put in your tractor should pay for itself in POWER. If, any gas escapes from the combustion chamber without giving POWER, the chances are your piston rings leak and you are wasting gas.

No-Leak-O Piston Rings won't leak because they're sealed with oil.

A specially cut groove—the "oilSEALing" groove—found only in No-Leak-O —packs an oil film in between your piston and cylinder walls like "packing" in a pump. This oil "packing" seals in all expanding gas. Every drop *must* work. The same "film" also prevents oil from working up into cylinder heads to form carbon and keeps "unburnt" gas and kerosene from seeping down into the crank case to weaken lubrication. Result—less gas, less oil, fewer repairs, more POWER.

No-Leak-O gives you *perfect oil control and compression in each individual ring*. Every genuine No-Leak-O Piston Ring has the word "No-Leak-O" stamped in the ring.

Jobbers and Dealers: Write to-day for literature and liberal dealer proposition. Let us tell you how our National Advertising helps bring you business.

Owners: Write for interesting booklet, "The Piston Ring Problem and Its Solutions," telling why No-Leak-O does what *no other ring can do*.

NO-LEAK-O PISTON RING COMPANY

Dept. F-10

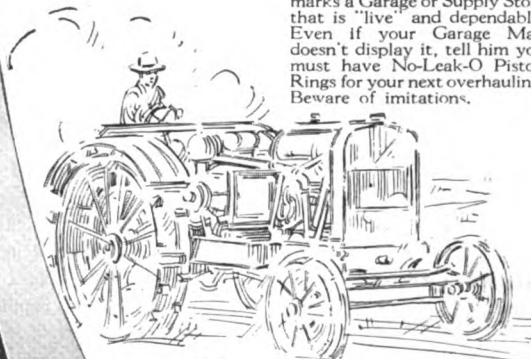
BALTIMORE, MD.

One Price During Eight Years of Continued Success

One design—for all makes—50c and up

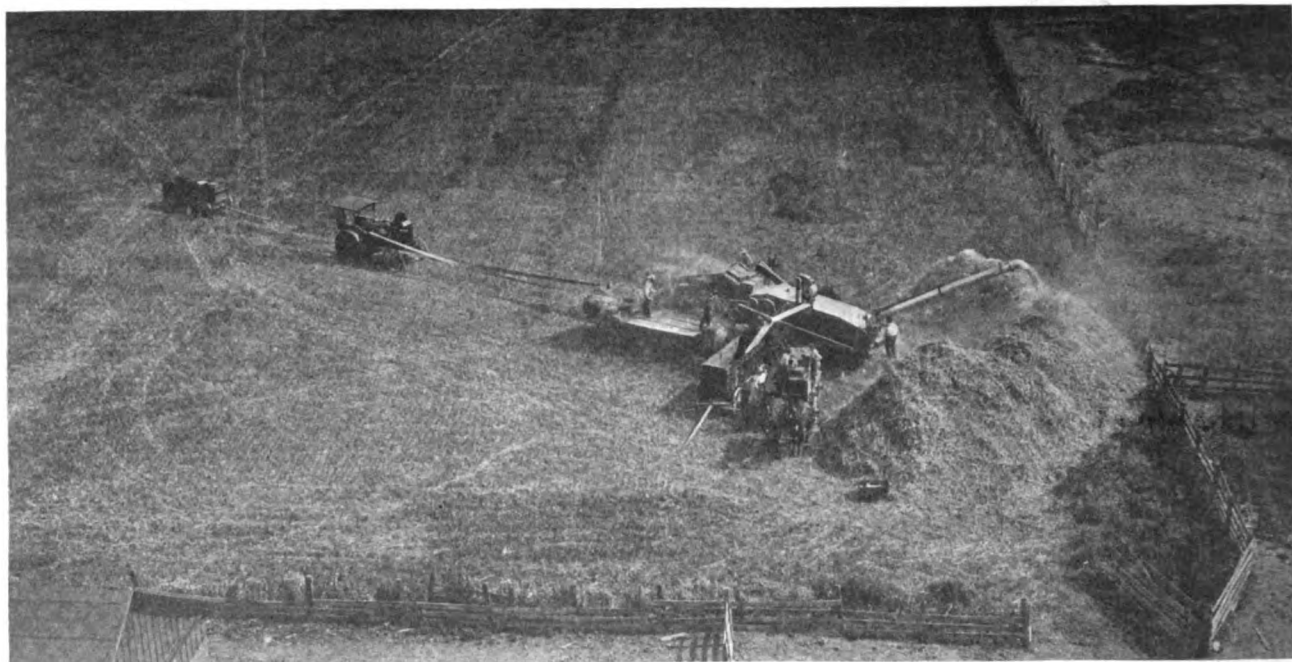
READ THIS SIGN

Remember it—Look for it. It marks a Garage or Supply Store that is "live" and dependable. Even if your Garage Man doesn't display it, tell him you must have No-Leak-O Piston Rings for your next overhauling. Beware of imitations.



WON'T LEAK

because they're sealed with Oil



An Unusual Picture of the Threshing Outfit at Work. Clean grain threshes out more profitably than that filled with weeds, as there is little dockage on which to pay freight.

farmers realize some returns for this expenditure of over thirty million dollars per year?" Dockage has a relatively low monetary value per pound and must, therefore, be converted into some product which will have a per pound value sufficiently high to pay the handling and freight charges incidental to marketing. The solution of the problem confronting us appears to be in the answer to the question, "What is the cheapest method of separating the dockage so that the wheat can be sold to better advantage, and so that the dockage may be used for feed on the farm?"

Present Cleaning Methods

A large portion of the dockage is removed at the country elevators before shipment. Many elevators grind the screenings and sell the ground feed, others ship the screenings to market hoping to realize something over the freight charges, while other elevators dump the screenings on the ground and then either sell or give the screenings to the farmers. Various estimates and tabulations of the costs secured from elevators operating cleaners, indicate that it costs approximately 2 cents per bushel for the country elevator to clean wheat. If all of the 1922 crop of spring wheat, 268,314,000 bushels, were cleaned at the country elevators at the cost of 2 cents per bushel, the expense of this cleaning would be \$5,366,280.

The dockage which is not removed from the wheat before shipment is cleaned out at the terminal elevators or flour mills, and most of the screenings are resold to the farmer as ground feed. This method is expensive to the farmer because of the high freight and other handling charges which must be included in the selling price of the feed.

Advantages of Cleaning Grain on the Farm

Clean wheat will generally bring a better price on the market, the freight on the dockage will be saved, and the screenings will be available for feed on the farm, and when so used can, after being finally ground, be substituted for the higher priced feeds, such as oats, corn, and commercial mill feeds. It is especially important that farmers clean their seed wheat. Clean seed wheat, together with good cultural methods, will result in the production of more wheat to the acre and less of waste material.

In most instances where wheat is stored on the farm it would be profitable for the farmer to clean his wheat before selling it. The farmer having wheat containing cockle, wild peas or large amounts of such dockage as wild oats, and barley, could well afford to clean his entire crop, even tho this were done with a small cleaner having a capacity only of from 15 to 50 bushels per hour before hauling it to market.



"Owners, Know Your Tractor"

(Continued from page 29.)

motive back of them. They are making farmers competent to handle tractors in an efficient and profitable manner. They are teaching dealers how to give their customers the right sort of tractor service.

Every once in a while you will find a tractor owner who is not satisfied with it. "There is always something the matter with it." "Repairs cost more than the thing is worth." "It breaks down

just when I need it most." "I can't depend on it." Those are some of the complaints that are heard from disgruntled tractor owners and are repeated over and over again.

Someone, somewhere, has said: "A tractor is no better than the man on the seat." That's true of any power-driven machine. There are automobile drivers who can strip the gears of a new car in less time than it takes the average, sensible man to learn how to shift gears. The same is true of a tractor. Knowing it, spells success; not knowing it, coupled with carelessness and "don't care," spell failure.

These are facts that the Advance-Rumely Co. knows and every other tractor manufacturer and dealer knows. And that is the reason for the development of the Rumely tractor schools. Putting a tractor into the hands of a man who knows nothing about its mechanism and its operation and its care is a dangerous business practice. Unless he has a natural mechanical bent he will often make a failure of tractor farming. But if he knows his tractor, how to operate it, how to keep it in good running order, how to recognize by sound needed adjustments and repairs, he will find that there is great satisfaction and profit in owning and using a tractor.

Again the Rumely tractor schools make the Rumely dealers competent to give service to their customers. It also makes them better salesmen—a combination that spells success.

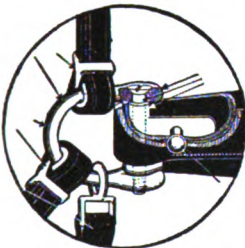


NOBODY ever expects to pick good apples from a scrubby tree; then why try to force the daughter of a 100-egg hen to a 300-egg production?

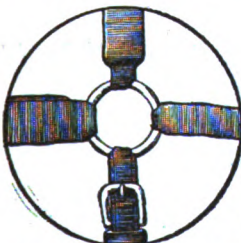


**Olde Tan
Harness**

Double Wear Certain! Metal-to-Metal Does It



Metal-to-metal construction. Metal bushing. Leather held tight without play or friction. Note special riveted metal extension in breeching.



Never this in metal-to-metal construction. All pull strain and wear is on metal.



BABSON BROS., 19th St. & Marshall Blvd., Dept. 2763, Chicago

WRITE for the free Harness-Book which tells you why Olde-Tan harness wears twice as long as any other high grade harness.

Every spot where there is excessive wear, strain or pull is protected by tough metal, shaped and fitted so that rounded metal parts are adjusted one against the other, thus taking away all corner pulls and sharp strains. No patching or mending of this harness because there are no places for Olde-Tan Harness to wear out. When you buy Olde-Tan Harness you do away with repair bills.

There is 70 year-old tanning skill behind Olde-Tan leather. Three generations of tanner-manufacturers have supervised the production of Olde-Tan Harness, following every step through the tannery and harness factory until the harness is ready for your

horses. No wonder that it is known throughout America for its superior quality!

Olde-Tan Harness has every adjustable feature—yet few buckles are used. These are placed only where convenience in putting on and taking off the harness is essential. No place where there is excessive strain or pull will you find a buckle on Olde-Tan harness.

You don't have to worry about your harness, if you are sure about the quality of the leather and if it has metal-to-metal construction. Olde Tan Harness is nothing radical or "new style". We just recognize the fact that nothing wears like metal. We merely place metal against metal to make sure of longer wear. Then, in addition to that, the finest leather that can be tanned is used.

Every Olde Tan Harness is sold under a guarantee which protects you during the entire life of the harness. Make no mistake. Find out all about Olde-Tan before you buy another set of harness. Write for the free Harness Book today. You may as well have the last word in harness—especially when it costs no more than any other harness you would buy.

**\$7⁵⁰
Down** **Puts this Harness
on Your Horses**

You don't even need to send this amount. We send you an Olde-Tan Harness absolutely no money down. After the first payment of \$7.50, you may pay the balance in easy monthly installments.

**Mail this Coupon
for FREE Book !**

Ask for our free harness book. Get your copy even if you don't expect to buy harness right away. Learn about how metal-to-metal construction — and Olde-Tan leather have doubled the life of a harness. Learn why you should buy at tanner-manufacturer harness. Mail coupon today and free book will be sent you at once.

Babson Bros.

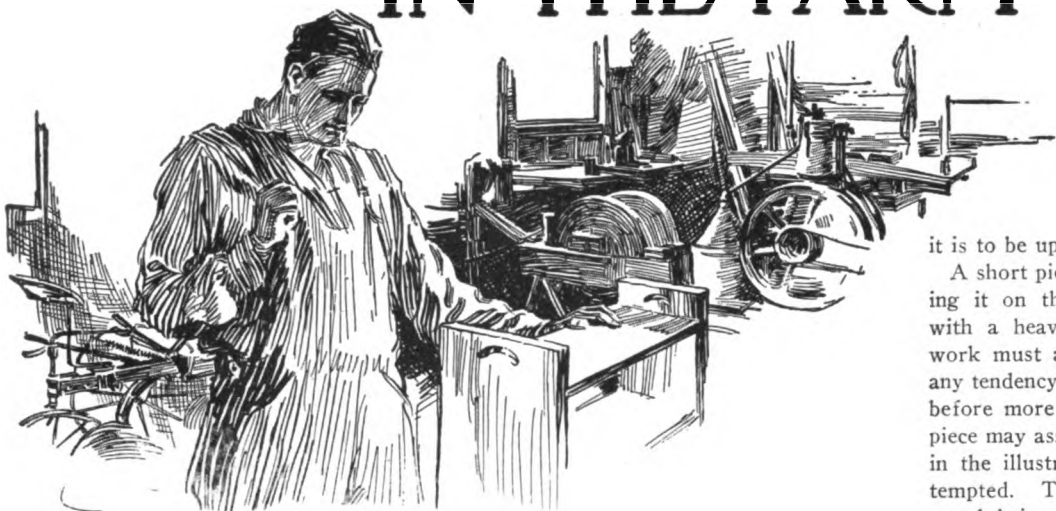
19th St. & Marshall Blvd., Dept. 2763, Chicago

Please send me free your Olde-Tan Harness book and all about your \$7.50 down and easy monthly payment offer on Olde-Tan Harness.

My Name.....

My Address.....

IN THE FARM SHOP



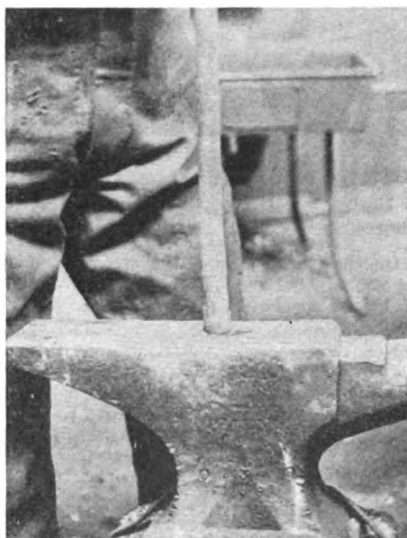
Drawing Out, Upsetting, Bending and Squaring Stock

By LOWELL R. BUTCHER

SO far as is possible, stock for the forging will be of such size that there is no necessity of "drawing out." In the small shop this would mean that innumerable shapes and sizes would have to be kept on hand. Consequently, most forgings will be made from metal that is "drawn out." Drawing out might be explained as lengthening a piece of metal and reducing its thickness or width by hammering.

Drawing out can be done a great deal easier and faster if the metal is heated as high as possible without injury to it. In many cases, the work proceeds much faster by working the metal over the horn of the anvil. The reason for this is simple; a piece of metal if laid flat on the anvil face and struck will spread both lengthwise and crosswise. If the width is to be the same as the original

stock, the piece must be narrowed by hammering it on the edge. When the work is done over the horn of the anvil there is little tendency for the metal to



Upsetting Long Stock

flatten; most of the force of the blow goes to lengthening the stock.

Care should be taken when drawing out or pointing round stock. Round stock should first be forged to a square before drawing out is attempted. When the stock has been reduced to the correct size, it may then be rounded with a few blows. This method of drawing out round stock will prevent the splits which are very apt to occur if the metal is worked round and round. The same method should be followed when drawing out any shape to a smaller round or when making a conical point.

Upsetting is almost the reverse of drawing out. In this case the metal is shortened and either or both of the other dimensions made greater. The method of upsetting will depend greatly upon the size of the stock and whether

it is to be upset thruout its entire length.

A short piece is usually upset by standing it on the anvil and striking down with a heavy hammer or sledge. The work must always be kept straight and any tendency to bend should be corrected before more upsetting is done. A short piece may assume the faulty shape shown in the illustration when upsetting is attempted. This may be caused by the metal being hotter at the ends than in the middle or may be because too light blows are used when hammering. A piece of this shape may be bellied in the center heating the center to a forging heat while the ends are kept cool. If the piece is so short that it cannot be easily heated at one spot in the center, the entire piece may be heated and the ends cooled in water before the upsetting is resumed.

When light blows are used in an attempt to upset a piece of metal, the force of the blow does not reach the center of the piece. Consequently, only the ends are spread and the stock is small in the middle and large at the ends. The only remedy in such a case is to use heavier blows; a sledge is probably best if the piece is not too small.

Longer and heavier stock may be upset by laying it across the face of the anvil, letting the heated end extend over the edge. Heavy blows are struck with a hammer or sledge. If the stock is heavy, its weight may prevent it from sliding when struck. Lighter stock may be backed up at the opposite end with a sledge or heavy hammer.



Upset Short Stock by Standing It on End.



Method of Drawing Out Round Stock.

Heavier pieces are often upset by dropping the heated end vertically on the anvil or by swinging them against the side. The weight of the material gives enough force to the blow to upset the metal.



Faulty Shape in Upsetting.

Many beginners have difficulty in keeping the corners of forged work square. This applies to drawing out as well as to shaping the piece. The piece meant to be square in cross-section often assumes a diamond shape such as is shown in the illustration.

To square up a piece of this kind, it is heated and laid on one of its sides. Strike the projecting corner so as to force the metal back into the body of the bar. The blow given the metal is a kind of sliding motion. It is not good policy to attempt to square up a mis-shaped piece of this kind by placing it on one of the corners and striking down. A six or eight-sided piece will usually result.

If the cutting block (between the horn and the face of the anvil) has a good square corner and is not badly battered, the stock may be squared by placing in the corner. The square corner between the face and the block aids in forming the metal to a square.

Right-angle bends may be made with the stock either cold or heated. It is not well to attempt a cold bend with anything but light stock. Usually these bends must be made at some definite place on the stock and it is well to mark this spot lightly with a cold chisel. The mark is usually placed so that it will be on the edge of the bend. Even a very light chisel mark on the side of the bend is apt to cause a crack at the corner. Bending in the vise is preferred as the piece may be gripped at the exact point where the bend is wanted.

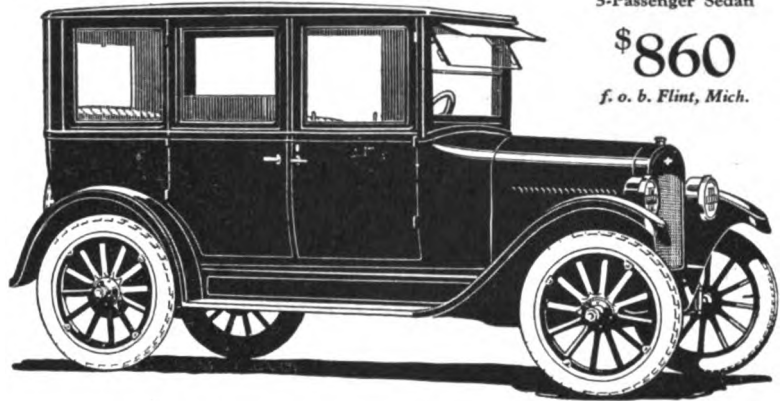


Squaring Up Square Work.

The Eyes of the World are on



for Economical Transportation



5-Passenger Sedan

\$860

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Holds First Place Among All Show Cars in Number of 1922 Sales

During 1922 the public bought more than 50% more Chevrolets than of any other fully equipped car, giving Chevrolet first place in number of cars sold among all cars exhibited at the 1923 N. A. C. C. Shows.

The remarkable rise of Chevrolet during the last twelve months has proved that the Chevrolet Motor Company has correctly gauged the shift of public sentiment towards the most economical unit of transportation that also meets modern requirements as to quality.

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SUPERIOR Two Passenger Roadster	\$510
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Chevrolet Motor Company, Detroit, Mich.

Division of General Motors Corporation

There are now more than 10,000 Chevrolet dealers and service stations throughout the world

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2 Books FREE



LEARN how to select a farm power and light plant. First study your needs, then choose that plant which will not only take care of your present day requirements but handle the additional loads you will want to put on your plant in years to come. Check up on these things:—

Under 3½ H.P. 3 H.P. or more **CK**

1-Sufficient power for every chore of less than tractor size

You should have 3½ horse power from the belt pulley for feed grinding, deep well pumping, wood sawing and heavy line shaft jobs.

2-Power in available form for belt use **Without belt pulley** **CK**

Your plant should have a belt pulley so you can run a fully equipped line shaft to which can be coupled all the chores you now do by hand power.

3-Direct connected - vs. belt or chain drive **CK**

Direct connection eliminates all belt troubles; no slippage; generator always runs smooth and with even speed.

4-A one-factory product **CK**

Buy a plant made complete in one factory—not an assembled unit—if you want an electric light and power plant that can be guaranteed by the manufacturer.

Insist on these things and there can be but one choice—the Phelps Power and Light Plant that gives 3½ horse power from the belt pulley; over 2 electric horse power for individual motors; all the light needed on the modern farm.

Two big books tell farm owners and dealers a lot about electric power and light plants they really should know. They are Free.

Phelps

Power and Light

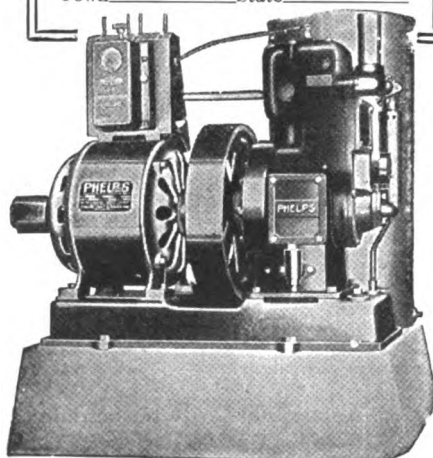
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WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

When bending over the anvil, the stock is laid across the face of the anvil with the point of bend almost to the edge. If a heavy sledge is held down on the stock near the edge of the anvil, the bend will be made easier and with less hammering. The bar will pull over a little when



Making a Right Angle Bend on the Anvil.

bending so the marked point will be at the exact corner. A little practice will enable the workman to get the bend at the exact point wanted.

A few points of the foregoing might well be emphasized. Drawing out is best accomplished with the metal heated as high as possible without damage to it. Metal will spread less when drawn out over the horn of the anvil. Upsetting should be done with the metal heated equally and with heavy blows. Squaring should be done with the piece on its side and not on a corner. A mark for bending should always be placed on the side of the bend. With these few suggestions and a little practice any one can perform the ordinary forge operations.



BUILDING the farming business without reading and study is about as successful as building a house without hammer and saw.



POUULTYMEN who know figure that 12 per cent meat scrap is enough protein for the breeders.



BUY the scrub bull a one-way ticket to the butcher. It will be a lot cheaper than his board bill.



SPEAKING of boarders—it's a pretty wealthy farmer who can buy expensive feed to keep cattle lice nourished.



HATCH early. Early chicks mean early pullets, early pullets mean early eggs, and early eggs mean big prices.

Motorcycle on the Farm

LIKE the automobile, the motorcycle has become a utility motor-driven vehicle. Costing less than an automobile and with a much lower operating expense, the motorcycle has been found a convenient mode of transportation, while its carrying capacity may be greatly increased by the addition of a side car.

A motorcycle is especially adapted to use on the farm. It has great speed, even more than the average automobile; it will travel roads that oftentimes are next to impossible for automobiles; its cost of operation, including interest on the investment, depreciation and fuel and oil averages less than a cent a mile. Thus the motorcycle makes an efficient and economical mode of travel.

During the last few months, William A. Radford, Jr., who manages the Radford Seven Springs Ranch, has been using the motorcycle with which he is shown in the accompanying illustrations. The ranch is located in the Santa Clara valley, near San Jose, Calif., where, as it is generally known, during the rainy season which lasts several months in the year, the ground is very soggy. Travel by automobile over the ranch during this season is next to impossible, but may be readily accomplished with the motorcycle.

Recently FARM MECHANICS received from Mr. Radford a number of photographs showing how he uses his motorcycle. The two reproduced are typical. One shows the sidecar loaded with fruit, while the other shows the motorcycle being used to haul young fruit trees uphill over plowed ground to the location in which they were planted. Unfortunately the latter picture does not show the trees



A Sidecar Makes a Small Truck of a Motorcycle and Is Well Adapted for Farm Hauling.

that had been piled in the sidecar of the motorcycle, but the type of ground the machine travels over and the steep grade of the land are pictured.

"No one can realize what a convenience a motorcycle on a farm is until he has used one as steadily as I use the one here on the ranch," writes Mr. Radford.



Rough Ground Has No Terrors for the Farm Motorcycle.

"It is surprising how many things you can do with a motorcycle. Here on the ranch we use it for hauling all sorts of loads. A trip to San Jose, 12 miles away, is made in a few minutes. It will travel up and down hill over the ranch. When it is considered that it is more than a mile and a half from one end of the place to the other, the time and energy it saves can be realized."

Mr. Radford's motorcycle is equipped with a sidecar, which is used for either passenger or freight service. The cost of operation, he says, has been practically nothing.



A DAIRY cow, so experts tell us, passes along 15 per cent of the fertilizer value of all she eats.



WHAT pure-bred cattle are to the livestock men, certified seed is to the crop growers.



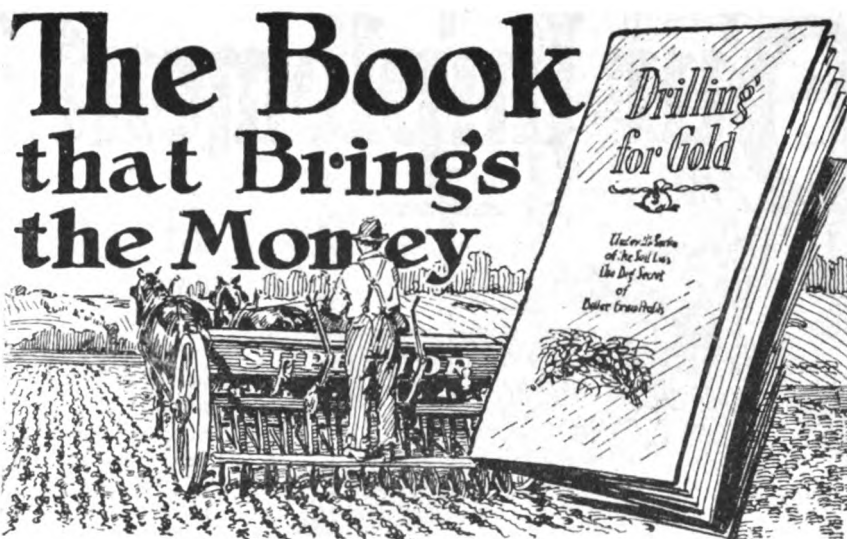
THE ton cost is a poor way to decide whether a fertilizer is cheap or expensive.



THE old Romans knew a thing or two about agriculture. For example, they knew that legumes are great soil improvers.



PLUMP heavy oats may make good seed, and they may not. It's important to know under what climatic conditions they were grown.



REAL GOLD! More money from your farm—this year. And this free book tells how to get it! Bigger grain harvests—and far better grain profits—invariably follow the use of

Superior Grain Drills

For Team or Any Tractor

The reason is that the Superior drill does—instantly and automatically—with *all* your grain, exactly what you would do if you were to plant each seed by hand. It makes a roomy trench. It deposits each seed at precisely the right depth. It spaces evenly—to the fraction of an inch. And then it carefully covers every seed—leaving miniature furrows to hold snow and moisture and to provide for harmless soil-expansion when the spring thaws come.

The whole story is well told in the booklet which is yours for the asking. Write today—or mail the coupon.

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Please send me a free copy of your book, "Drilling for Gold."

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Our Implement Inspector



HE finds much new and worth-while farm equipment offered to increase efficiency and cut down labor.

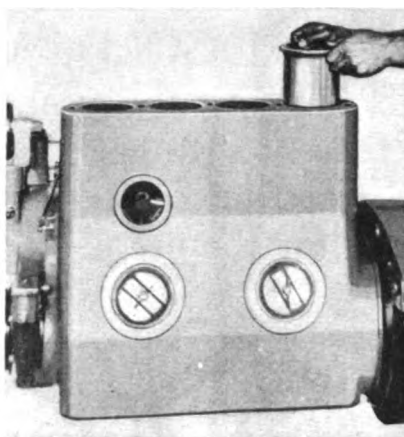
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New 15-30 Tractor

PROGRESS constantly is being made in tractor design and manufacture and the older companies in the business are bringing out machines with new features and "refinements" which make them more efficient, easier to operate and better adapted to all sorts of farm work.

One of the oldest of the tractor manufacturers recently brought out a new 15-30 tractor, a view of which is shown in the accompanying illustration. This machine contains many important and valuable features, especially those of the engine construction.

The crankshaft is fitted with ball bearings, which give smooth operation, great life and save fuel. The use of ball bearings is made possible by the fact that the crankshaft has only two bearings instead of three as is generally the case.



Cylinder of New 15-30 Tractor.

Another feature of this tractor is the one-piece main frame consisting of a single steel casting. Inside this casting or fastened to it are the principal working parts. Not only does this large casting

furnish a rigid frame to support the various parts, but it also helps to form an oil-tight, dust-proof housing in which the transmission gears, differential and other working parts are enclosed, where they are protected from dust and dirt and insured of a maximum life.

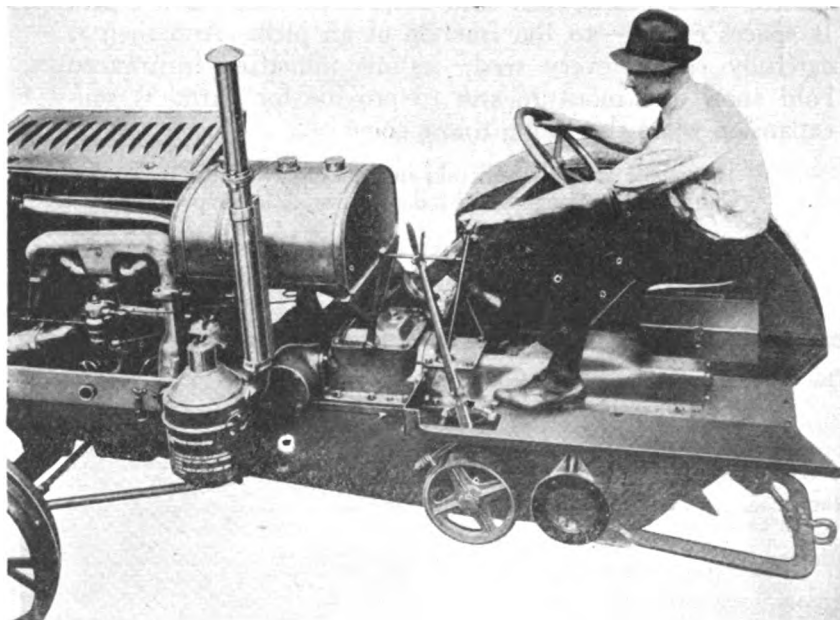
The tractor is sent out from the factory fully equipped with platform, fenders, adjustable drawbar, throttle governor, air cleaner and belt pulley.

The throttle governor performs a double function. It prevents the racing of the motor and the consequent destruction of bearings from excessive speeds and vibrations and maintains the even speed which is necessary when performing such belt work as threshing, silo filling and wood sawing. It also maintains an even speed when differences in loads are encountered while doing drawbar work.

Comfort and safety of the operator are provided for by a large platform, on which the operator can change positions at will without danger to himself. The heavy fenders on the rear wheels perform a similar function, and at the same time prevent dust and dirt from being blown on the operator and platform. The control levers are within easy reach of the operator when he is in the seat.

The flywheel is exceptionally heavy for a 4-cylinder engine of its bore and it has a wide face so as to have as much weight as possible on the outer rim where it adds most to its momentum. The purpose of the extra heavy flywheel is to give it a more uniform speed when at belt work.

The steering is made as easy as that of an automobile by excellent bearings in the steering knuckles, the lubricating facilities, the large steering wheel and the worm and gear mechanism. An adjustable drawbar extending far enough in the rear to permit short turning without having the hitch come in contact



View of Tractor with Rear Wheel Off, Showing Accessibility of Controls.

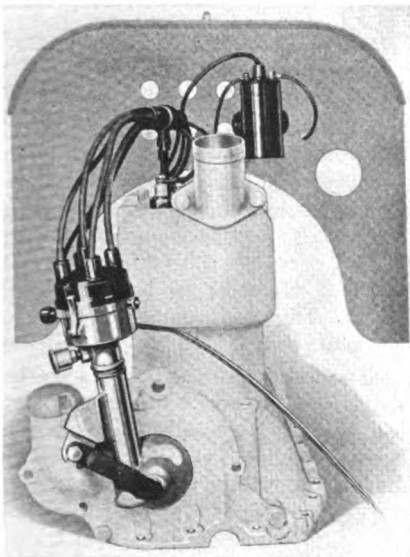
with the rear wheels is another convenient feature. The belt pulley is located so that lining up the tractor with the machine that is to be driven by pulley may be done quickly and efficiently.

The engine is equipped with a high-tension magneto with an impulse starter which furnishes as hot a spark when the engine is cranked slowly as when it is spinning. This makes starting easy. The tractor has three speeds forward, 2, 3 and 4 miles per hour. It is designed to pull three 14-inch plows on intermediate gears under practically all conditions met with on American farms. The tractor is rated conservatively at 15 horsepower on the drawbar and 30 on the belt work.



New Ford Ignition System

THE magneto for Fords shown in the illustration has new and improved features. It uses an interrupter cup, or timer, and has a cleverly designed governor for regulating the spark automatically. It is mounted at the front

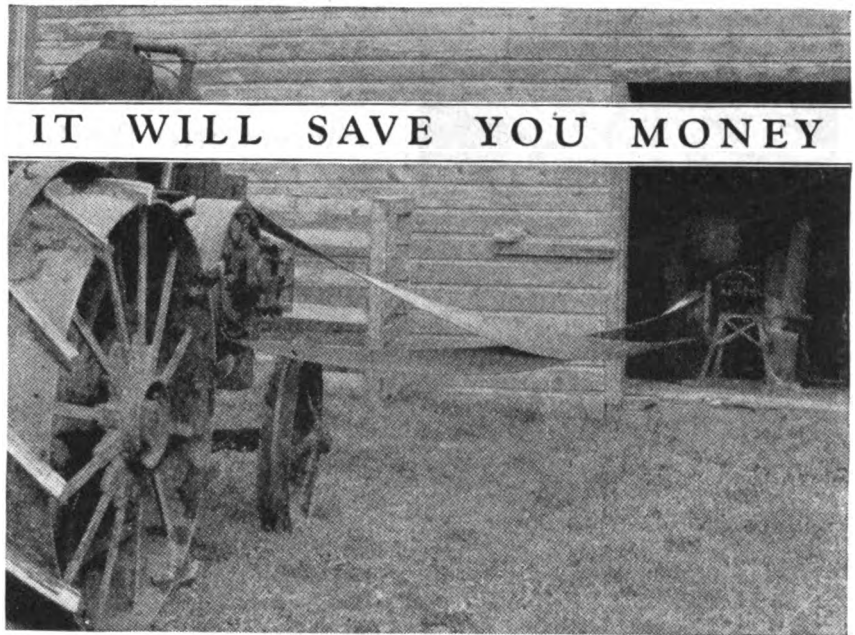


Ignition System for Fords.

of the Ford engine, being driven from the Ford cam shaft by steel spiral gears furnished with the outfit. It is kept absolutely rigid, and securely locked to the engine, by means of a forked arm which fastens under the head of the timer clamp bolt.

The manual advance of the spark is controlled by a rotating timer housing. An added feature is the metal plate covering the opening in the timer shaft, holding the grease packing in place and excluding all dirt and foreign substance.

The new fitting is suitable for all Ford models. It can use the Ford fly-wheel magneto as a source of ignition current, or can get its "juice" from the battery, if the car is equipped with start-



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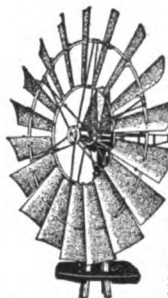
"The Goodyear Klingtite Belt is the finest belt I have ever used for feed grinding and other kinds of farm work. It saves me time and money." — B. K. REGULA, Oconomowoc, Wisconsin

THE Goodyear Klingtite Belt saves time, money and trouble for every farmer who uses it, simply because it is built with an understanding of what a belt ought to be and to have for farm power work. It is a powerful belt, capable of mastering the hardest drives on the farm, and delivering full power evenly, smoothly, steadily. It is a trouble-free belt, holding the pulleys in a slipless grip; is independent of weather conditions, needs no breaking-in, and requires no dressing. You can get Goodyear Klingtite Belts in endless type or in cut lengths from any Goodyear Mechanical Goods Service Station Dealer and from many good hardware dealers.

Goodyear Means Good Wear

GOODYEAR

4 TIMES Around the World with ONE OILING 100,000 Miles Without Stopping for Oil



An inventor who could develop an automobile, a railroad car or any other conveyance on wheels which would perform such a feat would be considered a wonder. But such is the record of regular accomplishment by the Auto-oiled Aermotor during the past eight years in pumping water.

Did you ever stop to think how many revolutions the wheel of a windmill makes? If the wheel of an Aermotor should roll along the surface of the ground at the same speed that it makes when pumping water it would encircle the world in 90 days, or would go four times around in a year. It would travel on an average 275 miles per day or about 30 miles per hour for 9 hours each day. An automobile which keeps up that pace day after day needs a thorough oiling at least once a week. Isn't it marvelous, then, that a windmill has been made which will go 50 times as long as the best automobile with one oiling?

The Auto-oiled Aermotor after 8 full years of service in every part of the world has proven its ability to run and give the most reliable service with one oiling a year. The double gears, and all moving parts, are entirely enclosed and flooded with oil all the time. It gives more service with less attention than any other piece of machinery on the farm. To get everlasting wind-mill satisfaction buy the Auto-oiled Aermotor, the most efficient windmill that has ever been made.

For full information write

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Why Patch When a Shaler Vulcanizes?

Why take chances with cold patches when you can make a heat-vulcanized repair that will "stick"—even outlast the tube—in five minutes?

No tool-kit is complete without a Shaler 5-Minute Vulcanizer. It is a necessity and the greatest convenience ever offered to the motorist.

The Shaler 5-Minute Vulcanizer is easy to use—you need only a match. Always ready—never bothered by wind or storm. Cannot injure or burn the tube. No gasoline—no danger of fire. Get a Shaler 5-Minute Vulcanizer from your dealer. It will soon pay for itself by the saving in time, trouble and tire repair bills.

\$1.50 At All Auto Supply Stores

Slightly Higher in Canada and West of the Rockies

The outfit includes the vulcanizer, 12 Patch-&-Heat Units (6 round for punctures and 6 oblong for cuts)—ready to use—with complete instructions. Extra Patch-&-Heat Units 75c a dozen.

C. A. SHALER CO.

2268 Fourth Street Waupun, Wis.



WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

ing and lighting. The outfit uses one Ford coil, the other three being held in reserve.



Silage Cutter Has Ball Bearings

THE 15-inch silage cutter shown in the illustration will cut from 15 to 25 tons per hour. It is very practical for the farmer who wishes to cut his own silage and also to do custom work for the neighbors.

The cutter is sturdily constructed and built for long life and dependability. The frame consists of structural steel, thoroly braced and hot riveted at the joints, mounted on a steel running gear. The blower housing consists of three parts—the lower casing, the upper wheel casing and the spout.

The lower wheel casing is made from heavy sheet steel, flanged and spot welded at the joints, and carefully fitted together, presenting a smooth, even surface and leaving the inside free from obstructions.

The upper casing hinges to the frame and clamps to the spout by means of eccentric fasteners which lock it securely. It can be quickly swung away from the machine, allowing easy access to the knives and blower mechanism.

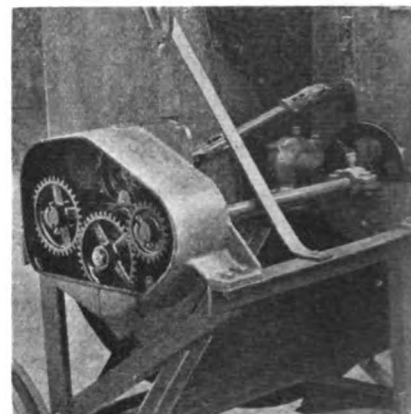
The spout, which is also made of heavy sheet steel, serves as a foundation for the delivery pipe. It is bolted to the frame and can be quickly removed, if necessary. There are no pockets or obstructions to retard the free delivery of the silage.

The silage filler is known as the "knife-on-the-flywheel" type. The special features incorporated in this machine make it exceedingly easy running, practically vibrationless and almost noiseless in operation. The flywheel it-

self is made of solid plate of open hearth steel, 3/4-inch thick, carefully balanced so as to run without vibration. To it are attached three cutting knives and six fan blades.

This mass of metal gives a tremendous momentum and assures easy cutting of the toughest silage. In addition, the knives are hot riveted to the flywheel. The knives are attached with heavy steel bolts, but can be easily adjusted with set screws and lock nuts.

The cutting plate consists of heavy

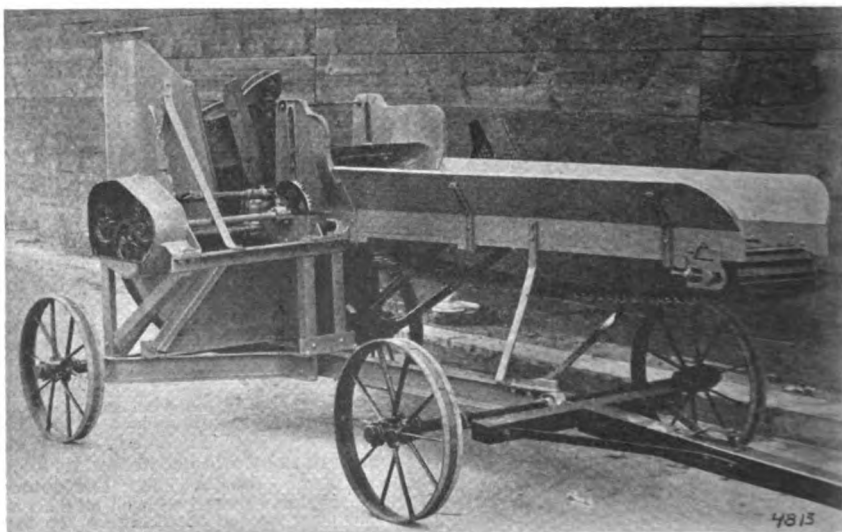


Gears of Ensilage Cutter with Housing Off.

cast iron bed plate, to which is bolted a chilled iron shear plate. This shear plate is made with three projecting lugs. These lugs, in connection with the corrugated feed rolls, positively prevent bunching of stalks on one side of the throat. This assures an even cut across the entire width of the shear plate.

The flywheel is mounted on a 2 1/2-inch shaft, which in turn revolves on annular ball bearings running in oil. This assures a minimum amount of power required for operation.

Change speed gears and feed gears all



New Ensilage Cutter That Has Ball Bearings on Main Shaft.

run in oil baths in dust-and-oil-tight cases.

Three lengths of cuts can be secured by a simple change in the combination of the gears in the gear box, providing for $\frac{1}{4}$ -inch, $\frac{1}{2}$ -inch and 1-inch lengths.

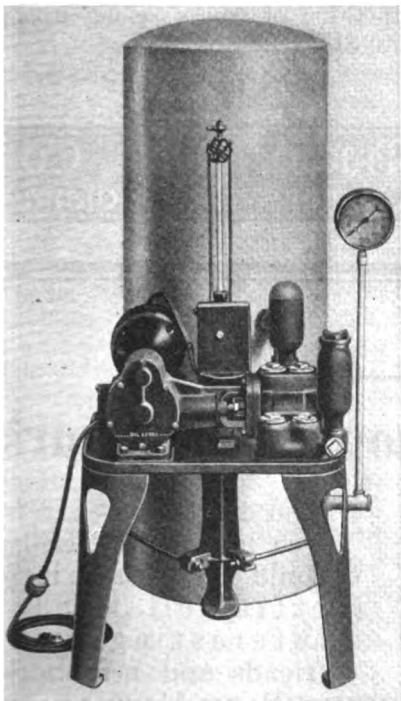
The self-feeding attachment consists of a steel apron mounted on malleable iron chain links, and two large feed rolls. This automatically feeds in the silage, doing away with the necessity of an operator constantly at the machine. The feed table and the flare boards are made of carefully seasoned wood.



Compact Water System

WATER under pressure in the home may be easily and economically obtained where there is electricity available for power to drive the outfit. Conservative estimates place the cost of operating a system of sufficient size for ordinary purposes at 3 cents a day.

The system shown in the accompanying illustration will pump 270 gallons of



Electrically Operated Water Pressure System.

water an hour and deliver it to the kitchen, laundry and bathroom under 50 pounds pressure, which is sufficient for fire protection and use on the garden and lawn as well. It will pump water from shallow well, cistern, spring or lake and is operated from any electric light socket or home lighting plant circuit, as the motor that operates the pump is only $\frac{1}{4}$ horsepower.

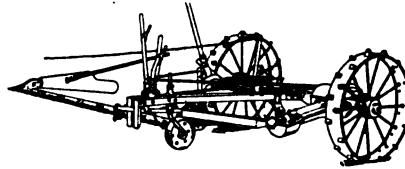
The pump is a self-oiling, double acting type. The pistons are driven directly from a shaft connected to the motor by

SURE OF YOUR HAY CROP

Quick, clean cutting of any kind of hay at the rate of three acres an hour, with one man, is the everyday accomplishment of the



An eight-foot cutter bar, operated entirely from the seat of any tractor, provided with safety device, operates at two speeds. Hyatt roller bearings make light draft, and specially built tractor design insures strength.



I just finished cutting 75 acres of alfalfa, which was done perfectly in three days with ease.

Mark T. Bowham, Chautauqua, Kans.

The Thomas Tractor Mower is the best tractor drawn implement we have ever used. We can easily cut six acres per hour with two machines.

Wm. Frye, Mgr.
Whitehorse Farms, Paoli, Pa.

Have been able to cut grass with this Mower that I could not cut with a horse drawn Mower. It saves time and does better work.

A. H. Tucker, Mgr.
Woodlawn Manor Farm, Woodlawn, Md.

Users have been most enthusiastic as to results with this tractor mower. Their testimony proves its great economy in operation, its wearing qualities and its value in saving the crop.

Write to us if your dealer hasn't it in stock.

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Makers of Hay Machinery Since 1873

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FARM LIGHT AND POWER UNIT

is a standard time tested plant backed by operating efficiency records second to none.

UPCO-LIGHT

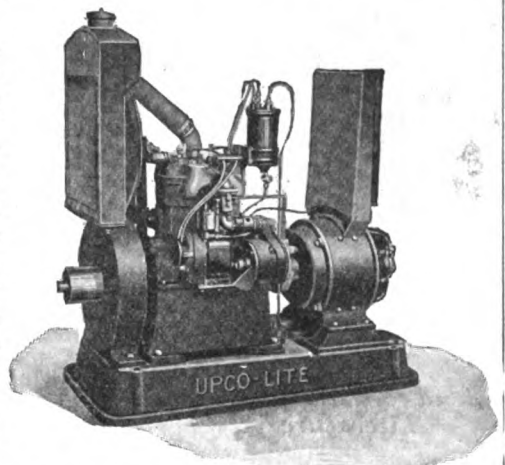
Plants are the definite results of more than 20 years' experience in the production of Unit Light and Power Plants of many purposes and embodies the latest operating and control features.

"A SIZE FOR EVERY NEED"

1-2½ and 3½ KW Plants in 32 volts. 2½-3½-5-7½-10-15 and 25 KW Plants in 110 volts.

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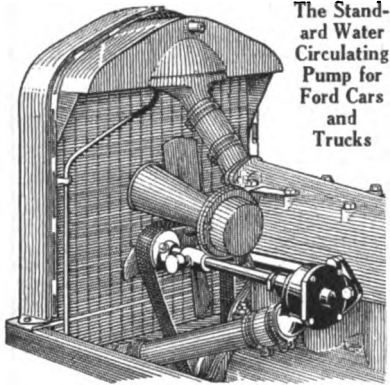


SPECIFICATIONS: 2½ KW. Engine—2 Cyl., 3½" x 4½". Speed 1000 RPM. High Tension Magneto, Stewart Vacuum System. Generator 2½ KW. Voltage 32 or 110. Battery in sizes 90 to 215 AH.

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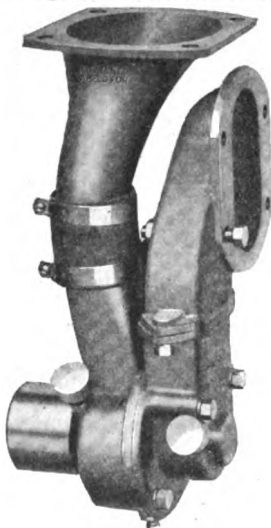
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explains their superiority*

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—the New MILWAUKEE CIRCULATING WATER PUMP FOR THE FORDSON TRACTOR



Guaranteed
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Buy them
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Milwaukee Wisconsin

a flexible coupling. Each forward and backward stroke of the piston pumps water. The pump is self-priming on a vertical lift up of 22 feet. A maximum lift of 25 feet can be made thru an air-tight suction pipe. Once primed the water is held in a suction pipe by means of a foot valve which insures a full lift and instant charge the minute the motor is started.

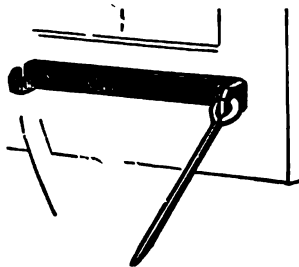
The floor space required by this system is 24 by 36 inches. The pressure tank is 18 by 48 inches and is heavily galvanized and tested to 125 pounds pressure per square inch. The pressure regulator, working automatically, may be adjusted to suit conditions. It usually is set to start the pump when the pressure in the tank falls to 30 pounds and stop it when it reaches 50 pounds pressure.

The first cost of this outfit is small. It is well constructed of good materials and will provide an efficient service for the home, barn or for supplying open tanks.



Holds Swing Door Open

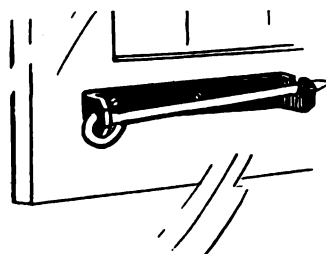
SWINGING doors, especially those on farm buildings, have a habit of blowing shut at the most inopportune times. Realizing this fact, a manufacturer of door hangers and door equipment has brought out what is termed a "door dog."



Holding Door Open.

This little device is shown in the accompanying illustration.

The door dog is a simple, practical device that may be used on any swinging door. It requires no stooping to adjust it. To open doors and preventing them from slamming the pin is lifted off the keeper with the foot. The pin grips any kind of surface—concrete, wood or gravel. To close the doors it is simply a matter of lifting the pin with the foot



Up and Out of the Way.

Double FORD Power

Double the Power
of Your

FORD Car or Truck

with the

Moore Transmission—
four speeds forward—two reverse—intermediate speed 100% more powerful than high—twice as fast as low without holding down the foot pedal.

FORD DEALERS Increase Your Sales

The MOORE Transmission will help you to meet the competition of trucks selling up to \$1,500.00.

Write for Details

Tractor-Train Co.
Connersville, Indiana.

—money for your spare hours

You may have a few free hours that easily could be turned into extra dollars. By interesting your friends and neighbors in FARM MECHANICS you can earn a tidy sum each month. No premiums or prizes, but actual cash profits for you. Our plan is liberal—and you know Farm Mechanics. For further information address P. N. R., 1827 Prairie Avenue, Chicago, Ill.

and dropping it in the slot provided for it, thus permitting the doors to be immediately and easily closed.



Time to Prepare for Spring Pigs

THIS is the time of the year to clean up farrowing pens and get ready for spring litters of pigs. Unclean quarters lead to infection in the young pigs, thereby causing farmers heavy losses. Even strong, healthy pigs die if forced to live in dirty, filthy pens.

Any old straw or bedding that has been left in the quarters should be burned and the inside of the house disinfected with a 3 per cent solution of creolin. Creolin used for stock dip will do for disinfecting the house. After the house has been cleaned out and disinfected, clean, bright straw should be scattered over the floor.

Successful hog raisers have found that putting the farrowing houses on a grassy spot of about a tenth of an acre is a good plan in raising pigs. This spot should not be used for a general hog run, since it may become infected with parasites or disease germs. Worms are a menace to paying pork production and are to be found in one-third of hogs that are mature. The farmer can guard against these pests by keeping the pigs on a grassy plot until they are a few months old.

Allowing the young pigs plenty of sunshine is a big item in raising them successfully. In the winter, however, the sun's rays are rather weak and if the pig derives any benefit from them he must be directly in their path. Pigs that get plenty of sunlight are far less likely to get sick than those that do not. In view of this fact, the farrowing house should be built so that it admits plenty of sunlight inside.

Exercise also is important in raising a litter of pigs. Locating the feeding place some distance from the farrowing house to force the pigs to walk a distance for their feed and water is a good way to make sure that they get exercise.



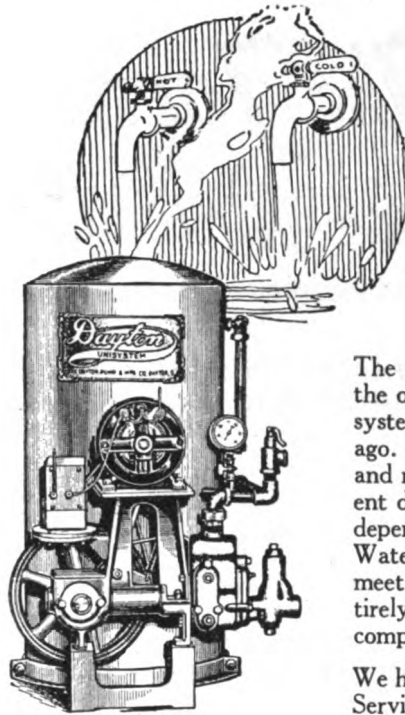
DID you ever want to go out to a meeting but couldn't because you had to watch the roast in the oven? Why not wish the responsibility on the fireless cooker?

Send for the INTERNATIONAL CATALOG



Our net price list. Full line of auto bodies and accessories for Fords at wholesale prices. Save big money on bodies by buying direct from factory.

For Fords—Prices From \$27.85 up
Factory to Consumer direct. Pay only one profit.
International Body Works Dept. 25, 914 W. Ohio St. Chicago, Ill.



"DAYTON UNISYSTEM" is a completely assembled water supply system. No complicated piping.



Running Water

The Same as City Water Service in House, Barn, Dairy and Garage

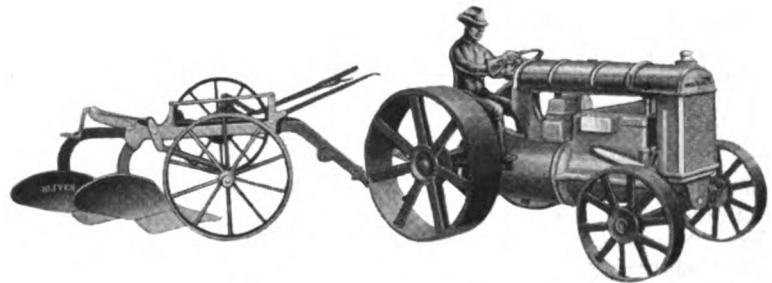
The present "DAYTON" Water Systems are the outgrowth of the original automatic water system first placed on the market fifteen years ago. During that time constant improvements and refinements have been added until the present design includes everything that makes for dependable automatic service. "DAYTON" Water Systems are built in sizes and styles to meet every condition of service. They are entirely automatic, noiseless, and are furnished complete ready to install.

We have prepared a booklet "Dependable Water Service" which will be sent free upon request. It tells briefly and clearly the things you want to know before making this important investment.

Ask for Booklet No. 500

The Dayton Pump & Manufacturing Co.
DAYTON, OHIO

Pacific Coast Branch
401-405 FOURTH ST. SAN FRANCISCO



Hey, Kids! All Set For Spring Plowing

IMPLEMENT AND FORD DEALERS

These are wonderful advertisements for the machines you sell. Get a supply now—also of Toy Ford Sedans and Toy Ford Touring Cars. Write for prices today.

Here's a lot of fun. A tiny Fordson Tractor and a perfect duplication, six inches long, of the Oliver Plow. Hitch them up together and let's go!

Solidly made of cast iron. No clockwork to get out of order. The Fordson is painted with red wheels and gray body, just like dad's. The Oliver Plow, painted red, has all the levers with plow bottoms painted silver just like the life size plow.

See Your Local Dealers

ARCADE MANUFACTURING CO.
FREEPORT, ILLINOIS



Our Readers Are Requested to Make Free Use of this Department for Questions and Answers on Modern Farming and Farm Improvements

Farm Mechanics Best

Editor FARM MECHANICS:

I was reading your magazine before and I think it is the best farm book out. If you do not know what to do on the farm you just have to look in FARM MECHANICS, and you get ideas what to make and what to do.

I am lost without it. Others tell me the other farm books are better than "FARM MECHANICS"—Well, I think they have to get up pretty early in the morning to beat this magazine. It tells you what to do from one month to the other, and that is the best; when to start to plant, and many interesting things.—W. J. BROBST, Allentown, Pa.



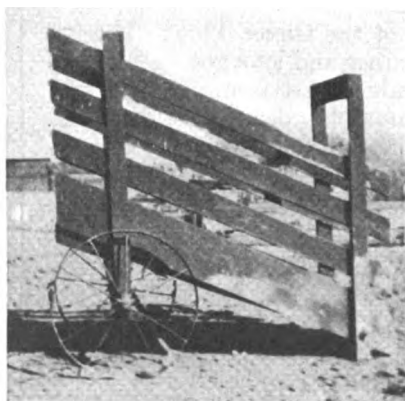
Loading Chute on Wheels

Editor FARM MECHANICS:

With the rapidly increasing number of hogs shipped to market or hauled to the railroad by motor truck, it is advisable to provide a loading chute which may be readily moved from place to place.

This chute was designed and built by Andrew Monson, a young farmer of Polk County, Nebraska. It is made of sound oak lumber and mounted on a pair of old cultivator wheels. By turning it around, it may be hooked to the truck or wagon and towed along to the place where hogs are to be unloaded.

When not in use it may be wheeled



Wheels Make This Loading Chute Movable.

into the shed without any lifting and, what is more to the point, a chute of this kind is more likely to be put away than one which requires a lot of lifting and carrying around.—FRANK A. MECKEL.



Hills Do Not Affect Radio

Editor FARM MECHANICS:

I am thinking of getting a radio but my home is on the side of a hill and I thought possibly I could not receive on account of the hill. It is about 400 yards from the house to the top of the hill which is above all the surrounding country. Is it possible to put the aerial on top of the hill and connect it with the radio in the house? If so, would I need extra batteries or would the ordinary radio batteries be sufficient?—John Tyler, Candor, N. Y.

Answer—I do not think the hill will stop you from hearing. I would just go ahead as if the hill were not there.—THE EDITOR.



Wiring Radio Set

Editor FARM MECHANICS:

I am building a radio set from your instructions published in your last three issues. Your instructions call for a variable condenser but furnish no instructions for wiring it to the set. I have a 43 plate vernier condenser mounted in my tuner cabinet.

I also wish to install an A battery potentiometer and a volt meter in my detector cabinet. Would you please furnish me with wiring instructions for installing the meter?

I am sorry to trouble you with this request but I have put in a lot of work on this machine and wish to get it as near right as possible.—L. F. ROUNDY, Hecla, S. Dak.

Answer—The variable condenser has only two connections and it makes no difference which one of these you connect to the two condenser binding posts. Connect one connection to each.

I have never used a potentiometer with the set I described, but I am enclosing a clipping which shows where to connect it.

I cannot say how a voltmeter is hooked into a set as I have never used one. Would advise you to write to the manufacturer of your voltmeter. They can give you full instructions.—THE EDITOR.



Radio Frequency Amplifier

Editor FARM MECHANICS:

I wish to add to my radio set a box loop antenna and a radio frequency amplifying transformer. As I do not understand the proper hook up, I thought perhaps you could help me out. I assure you any information will be appreciated.

My outdoor antenna is 150 feet copper cable, my box loop inside antenna is 175 feet. Can both be hooked up together?—Julius Trapp, Beckemeyer, Ill.

Answer—We would not advise you to spend money on the loop antenna as the outside one should be quite sufficient.

An article in FARM MECHANICS for February shows a radio frequency hook-up in which you do not have to use the radio frequency transformer as it works without it. You can save the money a transformer would cost.—THE EDITOR.



Hooking Up Condenser

Editor FARM MECHANICS:

Your article about building a radio set has been very interesting to me; in fact I am building one, and have it about completed. I fail to find how the variable condenser is hooked up, and would appreciate it if you will advise me just how to hook same up.

Can I use my Delco system of 32-volt instead of three B as you advise?

Would one wire 200 feet be better than two or more of the same length for an aerial?—W. H. TUNIS, JR., Smyrna, Del.

Answer—There are only two binding posts for connecting the condenser, and

there are only two connections on a condenser. It makes no difference to which post you make either of these connections, so you cannot make a mistake.

You will have to use "B" batteries as advised.

One wire (seven strand) is about as good as any if 60 to 100 feet long and fairly high.—THE EDITOR.



Hatch Early for Profits

ONE of the surest ways to make money out of the farm flock of chickens is to have early hatched pullets that start laying in time to catch the high egg prices of winter. Any farmer that has pullets laying between Oct. 1 and Jan. 1 is going to make money from his flock. Most farmers now hatch their pullets too late to take advantage of this condition.

The average pullet will pay her feed bill for the entire year with the eggs that she lays between Oct. 1 and Jan. 1. Some farmers and poultrymen go so far as to say that if a pullet lays four dozen eggs before the first of the year, she has paid her keep for the entire year. It takes two or three times this many eggs during the spring and summer to pay the expenses of feeding and caring for a single hen.

In the last few years, egg prices have started up about Oct. 1 and remained high until after the holidays. During this time of the year, old hens in the flock are molting and resting up for the next year, with the result that early hatched pullets must be depended upon for any eggs laid during that time.

Pullets of the general purpose breeds, including Plymouth Rocks, Rhode Island Reds, Wyandottes and Orpingtons, start laying when they are about seven months old, while Leghorn pullets usually start laying about a month sooner.

To have pullets come into laying during the season of high egg prices, it is necessary that those from the general purpose breeds be hatched during March and not later than April 15. Leghorns should be hatched in April and not later than May 15 if they are to start laying in time to produce the high-priced eggs.



REMEMBER way back when ice cream was a summer-time luxury for Memorial Day and the Fourth of July and the Sunday School picnic? Today it comes close to being the great American year-round dish.



DON'T let the winds tear your sheets and tablecloths when they are hanging on the line. A few moments spent in careful hanging so that both ends are well over the line will save time in darn-ing holes.



PATENTED

A Crib that Will Last 100 Years

This "Permanent" concrete corn crib will outlast any building on your farm. It is made of slabs of concrete having ventilating openings like shutters to drain the rain out.

It is built to last 100 years and during that time to preserve 100 per cent of the grain entrusted to its care.

It is Rat Proof—Fire Proof—Rain Proof—Wind Proof and Bulge Proof—the strongest, most permanent and least expensive crib to be had.

Write for circulars

Permanent Products 100-Year Concrete Fence Posts

The only Concrete Post in the world into which you can drive staples. This patented stapling feature lasts forever. The anchor at the base prevents heaving by frost. Fences made with our posts remain in perfect alignment and last a lifetime.

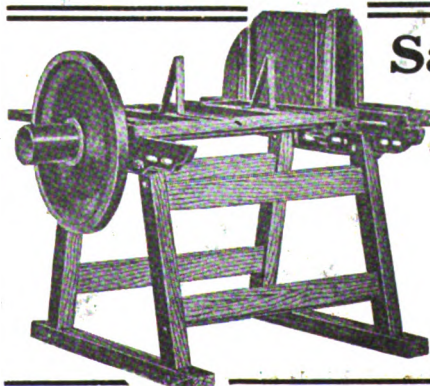
We sell and rent mould equipment.

Permanent Products Co.
15th Floor Marquette Bldg. CHICAGO



PATENTED

Saw More Wood



Freeman Saw Frames are sturdier and more readily adapted to farm work. An excellent feature is the frame mounted on roller bearings which run on the table guides.

This model sliding table wood saw weighs 300 pounds. There are others to suit the various demands of modern farmer.

Write for our new cata

Freeman Mfg. Company
200 Lakeside Ave., RACINE, WIS.



Uncle Sam Helps the Housewife

By DORIS W. McCRAY

THE office of home economics of the U. S. Department of Agriculture at Washington has several laboratories including a kitchen, where housekeeping problems are undertaken, information gathered, and various methods tested in a scientific way. Twenty women are engaged in this work. The results are then printed in the form of bulletins for distribution to women asking for them. They are also given out by the 975 extension workers who come in direct contact with approximately 9,000,000 women in counties all over the United States. Thus there is an army of a thousand women employed by Uncle Sam on home economics problems. The total distribution of these bulletins during the last five years has varied from 7,143,200 copies in 1917-18 to 2,951,850 in 1921-22.

In the experimental kitchen answers are found to the questions asked of home demonstration agents. For instance facts of practical value in pastry making have been discovered. It has been shown that the recipe used, the method of mix-

ing and handling the dough and the baking temperature affect the quality of the crust far more than does the kind of shortening. The effect of using pans of glass ovenware, tin, aluminum and granite have been observed; the experiments on brands of flour have been begun, as well as ways to keep the under crust from becoming soaked.

Numerous studies have been made with canning foods, these bulletins having proved so valuable during the war when women needed to be told how to conserve every bit of food. Data were compiled showing percentages of spoilage of 2,000 cans of vegetables using several ways of home processing. Intermittent processing was compared with continuous, and it was found that by blanching and cold dipping, food would keep perfectly when processed for one period. This one bulletin had a circulation of 2,930,250, the largest for any single bulletin. Last spring a new one on canning number 1211 gave latest canning instructions. Nine hundred thirty-eight cans of vegetables such as spinach, lima beans, and peas were canned both in the government kitchen, and country homes. It was found that vegetables in good condition

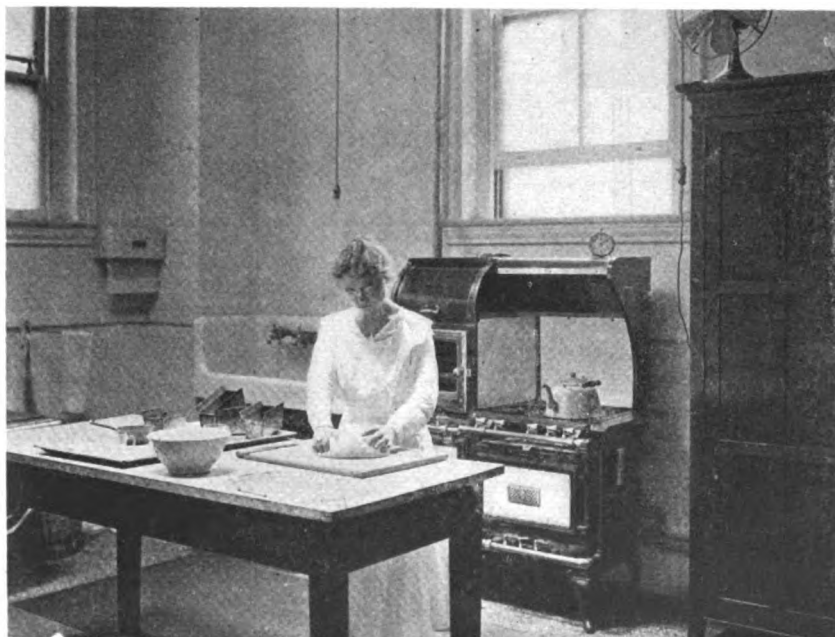
would have in them bacteria which after the can had been opened and kept in a warm place, would cause spoilage. This was where the hot water bath was used. Where the pressure cooker was used, bacteria were not present when the cans were opened, and the flavor and texture were as good as where the hot water bath had been used, showing the pressure canning is better.

A method was devised whereby jelly can be made from juices that do not ordinarily jell. Pectin, the substance which makes it jell, can be made at home of lemons and other fruits rich in this pectin, or it can be bought. A government bulletin gives directions for making all sorts of jellies, while another tells how to dry fruits and vegetables, with directions for making driers at home.

A food calendar for planning well-balanced meals was made by a government worker in Illinois, and during 1920, 15,784 families reported making changes in diets, conforming with suggestions on this calendar. "A Week's Food for an Average Family," "The Principles of Nutrition and Nutritive Value of Food," and a series of three bulletins on "How to Select Foods" all give practical information on planning meals. Special emphasis has been put upon food for children, and school lunches, as well as milk, fruit, and vegetables, the foods most important in adult's as well as children's meals.

"Economical Use of Meat in the Home" first printed in 1910 had up to 1913 a distribution of 1,735,000 and approximately 500,000 since that time. The demand from housewives for this particular bulletin was so great that shortly after its first appearance a special reprint of 500,000 copies was ordered.

My bulletin from the government has helped me many a time when some one spilled candle grease or jam on the tablecloth or axle grease on a suit. Another bulletin tells of best methods of laundering, and another how to plan an efficient kitchen. Government extension workers in northern and western states have reported among results of their home management classes that 1,661 fireless cookers have been installed in homes, as well



In the Government Kitchen at Washington All Kinds of Food Stuffs Are Tested for the Benefit of American Housewives.

as 2,509 pressure cookers, 641 driers, 1,320 washing machines, and 3,000 other conveniences. In 30 states 49,400 garments have been remodeled at a saving of \$203,789 according to clothing specialists. Thirteen thousand six hundred ninety-five children have been benefited by hot school lunches and improved meals.

In the experimental kitchen is a respiration calorimeter, which measures the amount of energy it takes to accomplish different household tasks. For instance, it was found that about the same amount of energy is used in sewing by hand as with a power-driven machine, but that in the case of the latter, 16 times more work is done in an hour. It takes six times as much energy to use a foot-driven machine as to sew by hand, and the output is fourteen times greater. This shows definitely an electric machine is worth having.

Fifty technical bulletins have been published by the department from 5,000 to 12,000 copies of each having been sent to teachers. During the past year 36 articles written by government experts have appeared in technical home economics publications.

Two of the newest bulletins are "Rice as Food," and "Floors and Floor Coverings." Of the 42 bulletins free to housewives for the asking the average distribution has been 500,000.

The U. S. Department of Commerce and Bureau of Fisheries have made studies in the use of fish in the home, the Bureau of Standards of standardizing weights and measures used in the grocery store. The U. S. Public Health Service has studied health and disease so vital to the homemaker's interests, while the Children's Bureau of the U. S. Department of Labor sends out bulletins regarding child welfare, care, and feeding. None of these departments duplicate in their work.

According to C. F. Langworthy, former chief of the office of home economics, "Housekeeping involves many processes, uses many different materials, and requires much time and labor. Knowledge and skill are all important elements of success. Economy of time, labor, and of material are all important in making the family resources meet family needs." The government is helping housekeepers with these problems.



TRY soda crackers rolled to a fine dust the next time you want to thicken a cream soup. Add them just before serving.



FINE-GRADE steel wool will take paint spots off woodwork without injuring the varnish.

"I Cleared \$3700 Last Year With Your Ditcher"

Joseph Rivard

JOSEPH RIVARD is but one of hundreds of men who have taken up this big-money business of ditching. And many others are making even more with a **Buckeye Traction Ditcher**.

"We made \$4500 last year with our Buckeye," write Herr Bros., Piper City, Ill. "We have just ordered two more machines, making five in all, which we own."

Made \$71 In One Day

R. W. Sherrard, Rochester, Ind. writes, "In one day's work with my Buckeye, I cut 117 rods of ditch 42 inches deep, for which I received \$71. I have had my machine for three years, but run it only half the time as I have other work to attend to. It is still in A-1 condition."

We Will Show YOU How To Make Big Money

These are average letters from a few Buckeye owners. We have started hundreds of others—farmers, farmers' sons, contractors—in this high-profit business of ditching. Right in your own locality, spare time or full time, you too, can easily make thousands of dollars a year in this big-money work. **No experience necessary.** Our service engineers start you right and stand behind you.

For the ability to dig through the toughest jobs, through hardpan or frost; for built-in ruggedness and durability; for the utmost service through season-after-season continuous work, **the Buckeye Ditcher is without an equal!**

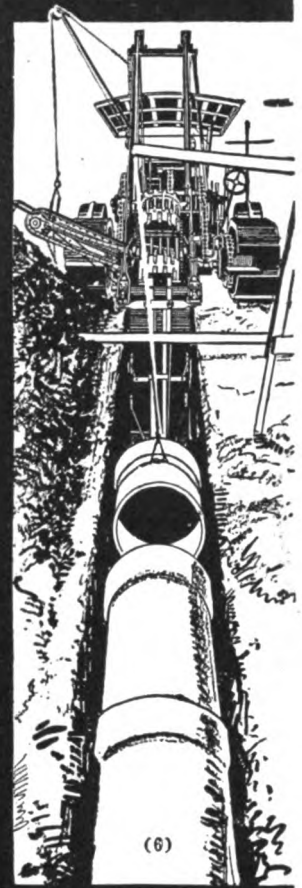
Drop us a line today. Let us talk over with you the ditching possibilities in your section. We will give you our unbiased advice about starting in this large-paying business in your locality. Write today.

The Buckeye Traction Ditcher Co.
536 Crystal Ave., Findlay, Ohio

I cleared \$3700 above all expenses last year with a Buckeye. I dug 23,431 rods of trench during the 1918 season—as high as 325 rods in one day.

Will be glad to write anyone who is thinking of going into the ditching business.

—JOSEPH RIVARD, Tilbury, Ont.



Ask the Man Who Hasn't One

FARM MECHANICS is a member of the Audit Bureau of Circulations.

Do you understand what that means to you as an advertiser.

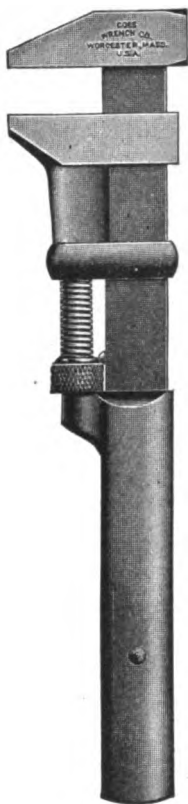
It means that you get a "square deal" when you buy our circulation. It means that the net paid distribution of Farm Mechanics has been verified by the only recognized authority on circulation.

It means all that and more. It means that our circulation is "above board". We have nothing to conceal.

Facts are given in detail in the A. B. C. statements. Farm Mechanics is glad to furnish them on request. Every publisher with nothing to hide can do the same.

So, ask, "why not?" of the man who hasn't one.

COES WRENCHES



On the modern farm where everything is being done by machinery, you will find that Coes Wrenches are helping to keep each and every machine in first class running order.

Coes Wrenches are built to give better service and last longer than any other wrench on the market.

*For sale by all good
dealers*

Coes Wrench Company

Worcester Massachusetts

WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

SOMETHING THE BOYS CAN MAKE

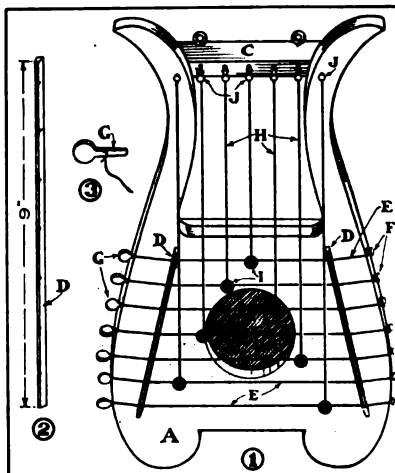
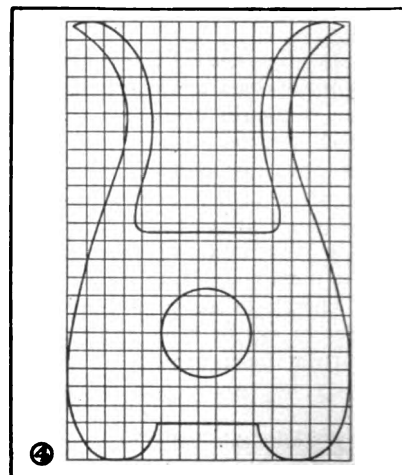
A Door Zither

THE door zither is a novel home-made contrivance, once a fad and part of the furnishings of studios and homes, but now seldom seen. In fact, it seems to have been forgotten by most people, and few remember its construction. The working principle is simple. The zither hangs upon the face of a door, and small metal pellets suspended on threads strike the strings, when swung by air currents, causing the strings to vibrate and send forth tinkling melodies. The air currents are produced each time the door is opened and closed.

Making the zither is interesting work, and I know when you have finished you will enjoy the novelty of possessing this little wind instrument.

In the front-view illustration of the

you have cut the end, side and bottom pieces, fasten them together with glue, omitting nails entirely. Also glue the box to sounding-board A.



completed zither (Fig. 1), and the rear-view illustration (Fig. 5), the parts are identified by letters. Sounding-board A is the first part to prepare. It requires a piece of 8-inch board 12 inches long and about $\frac{1}{2}$ inch thick. Perhaps you can find a box board of the right size. To simplify laying out the curved edges. I have plotted them out on a diagram ruled off into squares. If you will rule similar squares upon the board you are going to use, ruling the lines $\frac{1}{2}$ inch apart, then draw the curves upon the large squares as they are shown upon the small squares, you will have an exact reproduction of the pattern. Cut the piece out with a small saw, and smooth up the edges with sandpaper. Bore a ring of holes in the right position for the sound-box opening, and cut out the wood between the holes.

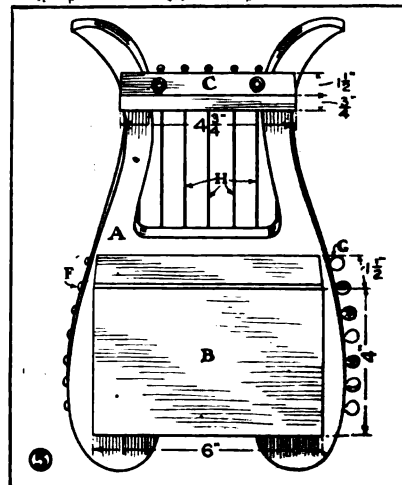
The sound-box, mounted upon the back of sounding-board A, can be built of cigar-box wood (B, Fig. 5). The diagram shows its dimensions. When

Top strip C (Fig. 5) must be of the same width as the depth of sound-box B. Screw a pair of screweyes into it for hangers.

Bridge strips D (Fig. 1) are narrow strips of the length shown in Fig. 2, with notches in the face edge $\frac{5}{8}$ inch apart. Glue them to the face of the zither in the positions indicated.

The zither should be stained mahogany color, then given a coat of shellac, then two coats of varnish, before the strings are put on.

Drive a row of nails (F) in one edge of sounding-board A, in line with the notches in bridge-strips D, to fasten strings E to, and bore a row of $\frac{1}{4}$ -inch holes in the opposite edge for keys G. Use steel wire such as is used for banjo strings for the zither strings. Cut tuning keys G as shown in Fig. 3, with tapered ends, and drill a small hole thru which to run the string wire. Tighten the strings the same way you would tighten banjo strings.



Get seven round, split lead fishing-tackle sinkers for the suspended balls (I, Fig. 1), and silk thread for suspending them (H). Drive five nails into the edge of strip C $\frac{5}{8}$ inch apart (J), and one into each of the sounding-board up-rights, from which to suspend threads H. Adjust the lengths of the threads so a ball will come opposite each of the seven horizontal strings.

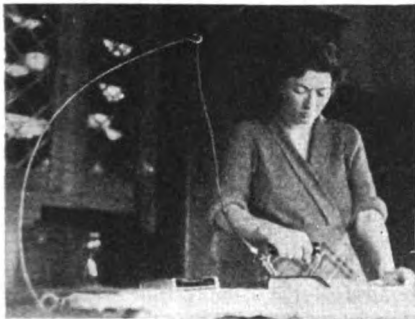
(Copyright, 1922, by A. Neely Hall.)



Keep Ironing Cord Out of the Way

ONE often finds the cord which attaches the flat iron to the socket a continual nuisance because it is usually in the way. Yet a certain amount of slack is always necessary to give the iron the range of the board.

The cord holder shown in the illus-



Holder Keeps the Cord of the Electric Iron Out of the Way.

tration is made of a length of heavy galvanized iron wire. One end is formed into an eye to take the cord at the desired point. The other is bent into four turns about a broomhandle and then into a double, three-sided clamp which slips over the right-hand end of the board.

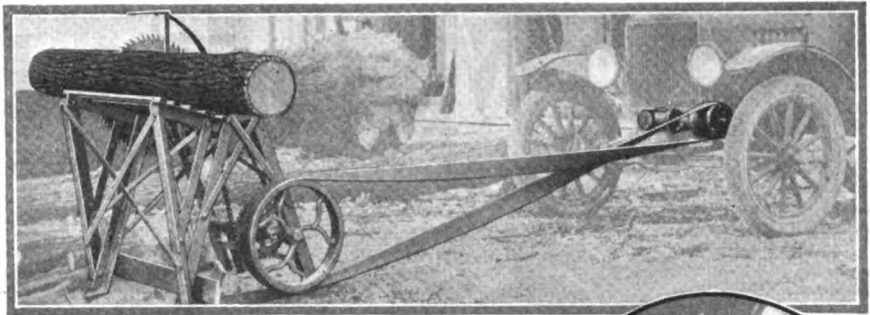
All that is needed to make this holder is a pair of pliers and, once made, it is placed and removed without tools.—D. R. V. H.



AS a more liberal use of pasture will save feed and labor, ample pasture should be provided for all stock. This may be arranged for by reducing the number of stock, or by using some of the mowing land for pasture, or both. Horses in many cases may be pastured to a greater extent than usual.



IN order that there may be no shortage of hay if some of the mowing land is used for pasture it might be well to plant an emergency hay crop. There is no crop more valuable for the purpose than the soybean. If there is a favorable growing season, producing an excess of hay, the situation may be met by selling some of the grass hay, if the price is favorable, or by putting the soybeans into the silo with corn.



Saw wood with your Ford!

Complete outfit (as illustrated) Addix Power Pulley and all-steel saw rig (belting extra when ordered) **\$55**

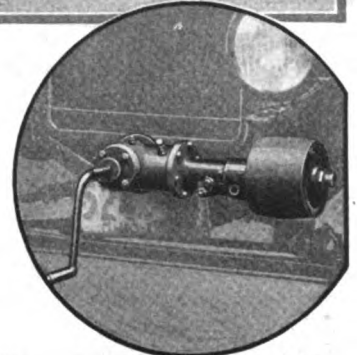
Saw wood for yourself and others, or run machinery, pumps, feed grinders, separators, light plants, or drive wells, with power from your Ford!

The Addix Power Pulley makes your Ford engine useful whenever you need power. Quickly and easily attached by anyone. Once attached always ready and always with you. No jacking up of car, no wheels to change, simply slip belt over pulleys, back car to tighten belt, and start your engine! Engine speed automatically controlled by variable speed governor which controls gas feed, saves gas and prevents engine racing. Clutch throws power on and off without stopping engine.

Order today from this advertisement
Satisfaction guaranteed or your money back
More information on request

THE AUTOMATIC ACCELERATOR CO., 1205-7 Harrison Ave., Cincinnati, O.

ADDIX Power Pulley
with variable speed governor
for FORD CARS and TRUCKS
MAKES YOUR FORD AN ALL-ROUND PORTABLE POWER-PLANT



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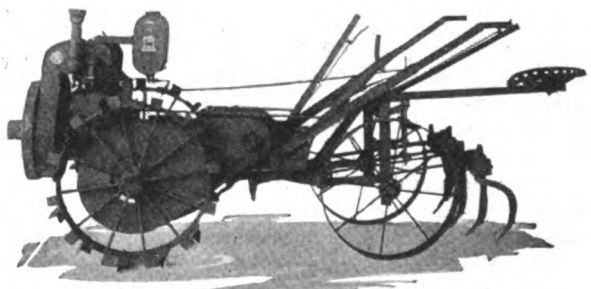
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Repairs on Samson

To the Expert:

As you are such a good hand at answering question I wish that you would give me a little light on these.

We have a Samson model M tractor which needs new pistons and we are replacing them. How much clearance should there be left between piston and side-wall?

The clutch needs tightening also, but the outside adjustment does not seem to help much. What can be done to tighten it?

What kind of lugs would you recommend using on loose soil, which is found in fall when pulling a corn picker?

What kind of fuel would you recommend to use in a Samson?—WALTER J. VANDERMARK, Everly, Iowa.

Answer—The proper clearance for the pistons is not less than .002 of an inch or more than .005. If the clearance is less they will expand when warm and may score the cylinders; if the clearance is more they would slap. In fitting the rings leave a clearance of about .005 between the ends when the rings are in the cylinder.

The Samson tractor uses a multiple disc clutch, and it is possible that the discs have become so worn that the clutch spring will not bring them firmly together. The only thing to do is to replace the discs with new.

If the soil is so loose that the tractor wheels sink in or slip it would be best to equip your regular wheels with an extension rim, which can be obtained from your dealer. These rims are about eight inches wide and have straight lugs on them. This practically doubles the traction of the wheels in loose or sandy soil.

Kerosene will always make the best fuel as it has considerable more power than gasoline or distillate, but the great difficulty is in properly vaporizing it, so that none of the raw kerosene gets into the combustion chamber because it will pass the piston rings into the crankcase and dilute the oil, which destroys its lubricating qualities. The Samson, however, is made to operate on either gasoline or kerosene so that difficulty should not be encountered.—F. M. SERVICE.

Mr. Service will answer free of charge for Farm Mechanics readers questions of general interest on Automotive troubles. As a "trouble shooter" he is probably the best equipped man in the industry, having diagnosed the ailments of thousands of automobiles, trucks and tractors. Put your troubles up to F. M. Service—Editor.

Painting an Auto

To the Expert:

I have been a reader of FARM MECHANICS for over a year. I would like some information on outside painting of automobiles. Could a man with a little experience at painting paint a car? Or would it be better to have some one in the business do it for him? Also, how could I remove tar, that is used for road purposes, from different parts of the car? I would appreciate any information on this that you will be able to furnish. I can highly recommend FARM MECHANICS as a farm paper.—D. L. CLANAHAN.

Answer—To paint a car requires considerable skill on the part of the average owner to obtain a first-class job. In the first place, the car must be absolutely clean and all rough spots, etc., thoroughly rubbed down with fine sandpaper. Next the car must be in a barn or room where there is no possible chance of dust being in the air. Usually it is best to hang damp sheets over the ceilings and walls to catch the dust that might come down, and to sprinkle the floor with water to settle any dust that may be here. Now, if the paint is put on smoothly with a good brush you will have a pretty good job.

To remove the tar from your car use gasoline and a rag. If it has become hard purchase a can of paint remover and rub the spots with a rag dipped in it, being careful not to saturate the rag too much or the paint will come off as well as the tar.—F. M. SERVICE.

Gas Doesn't Explode

To the Expert:

I am a reader of FARM MECHANICS. I have a little engine trouble, but haven't seen anything of that kind in your maga-

zine, so I will ask you a question and would be glad if you could answer it.

I have a 5 horsepower gasoline engine. I use a hot spot and got a new spark coil and a new igniter. I have a good spark at the igniter and it gets plenty of gas, but it won't explode the gas. I would be thankful if you could help me.—GEORGE TISCHER, Maud, Okla.

Answer—Are you sure that your engine will compress the charge and hold it compressed until the spark explodes it? If the valves were not seating or were being held open the mixture would not be compressed.

Gasoline and air when mixed together are not easy to ignite unless compressed to from 30 to 70 pounds pressure per square inch.

If the valves are all right you will be able to feel the compression when the motor is cranked. There should be a distinct springy feeling as the piston comes up on the power stroke. It is also possible that while the gas may be getting to the carburetor it may not be entering the cylinder due to a stoppage in the nozzle or the inlet needle.

We would suggest that you take the carburetor apart and clean all the gasoline passages. If you are getting a good spark at the breaker, be sure that the spark is in time with the piston travel. The spark should take place just as the piston passes dead center or the top of its up stroke with the valves closed.—F. M. SERVICE.



Tungsten Points

To the Expert:

I have a 4-cylinder high tension magneto and the points are worn out.

Would it be possible to use tungsten steel points in place of the regular platinum points as I find that these points are more expensive than gold. If it were possible to use tungsten steel points, how long would they last and would they give a good spark?—GEORGE SIMPSON, Hewitt Landing, Sask., Can.

Answer—You could replace the worn out points with tungsten by soldering them in place on the breaker, and while good results would be obtained, it is a question whether or not they are as

Motor Trouble Advice

good a conductor of electric current as platinum.

The life of a tungsten point would be found to be nearly as long as that of platinum, tho they do not wear as evenly and are more likely to pit.—F. M. SERVICE.



Fordson Pumps Oil

To the Expert:

My Fordson has been used about two months. It pumps oil and fouls No. 1 and 4 plugs, in two or three hours so I have to change them.

The pistons are tight. I cannot move them when at top or middle. I ground the valves. Springs are good. I have the right clearance on cam shaft.

My dealer says new rings are necessary. I don't doubt him, but it seems funny new rings are required as early as this. I have enough oil in case at all times. It does not overheat any. Do you think it is the rings? If so, how often in a year do you change them?—C. M. Dodge, Walhalla, Mich.

Answer—Your dealer is right. New rings are necessary to eliminate your trouble. The rings that are used on the Fordson have a slightly tapered surface, which when placed on the piston with this taper up cause the rings to ride over the oil on the cylinder walls on the up stroke and the sharp edge of the ring will bring down the excess oil on the down stroke.

Often on a new tractor this taper does not fit the circumference of the cylinder walls perfectly and so does not perform the duty expected of them. When a case of these poor fitting rings develop the only thing to do is to replace them with new.—F. M. SERVICE.



Magneto Out of Order

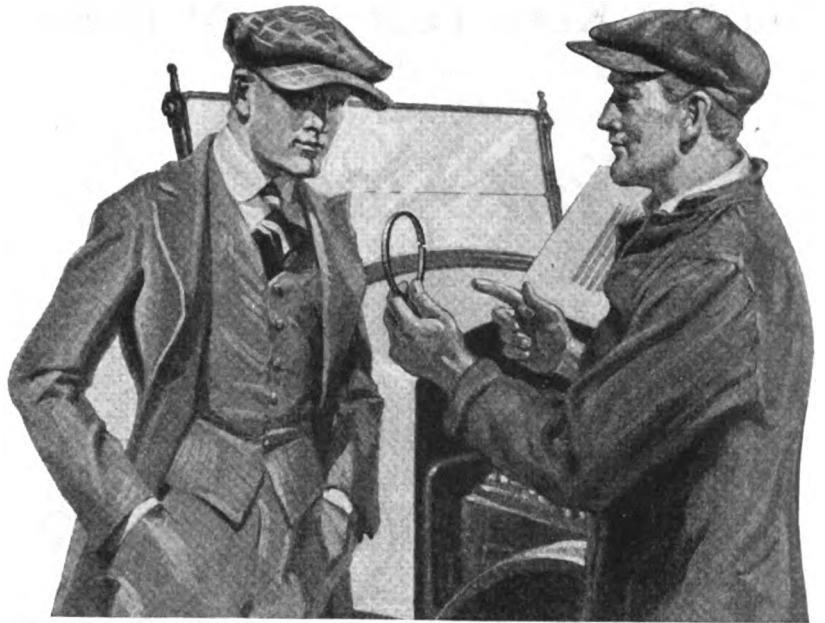
To the Expert:

I have a 1917 model Ford touring car which has been giving me considerable trouble lately.

The magneto is the seat of trouble in this case and acts as follows: Current will flow from the magneto only intermittently. By that I mean that it comes on and off at different intervals, sometimes staying on for quite a while, then it will go off and stay off for a period.

Rough places in the road seem to have no effect on it except that it will sometimes jar off but never jars on. The way I found out the above was to run the engine on a battery of dry cells and leaving the spotlight turned on.

Any help you can give me will be very much appreciated, as I never saw



What Mr. Perrault says:

The following letter, from Mr. C. B. Perrault, of The Perrault Co., Cleveland, Ohio, is typical of the hundreds of letters we have received endorsing Burd Piston Rings:

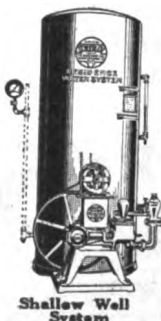
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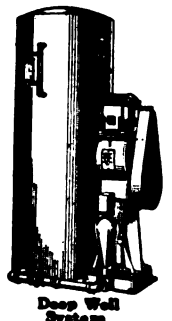
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any trouble of this kind printed in FARM MECHANICS.—DALE WALTON, Browning, Ill.

Answer—We would advise that you first check over all your wiring and be sure there is no loose terminal or broken wire that is jarring on and off. If nothing is found wrong with the wiring, run the motor on the magneto until it shuts off. Then remove the three screws that hold on the magneto plug on top of the transmission cover. Remove the magneto plug slowly and carefully and look down into the hole it was removed from. You will find that a small piece of broken wire or cotter pin has lodged on the field coil terminal and is touching the transmission case, causing a short. Remove this with a pair of thin nose pliers and your trouble will be eliminated.—F. M. SERVICE.



Cone Clutch Loose

To the Expert:

Wish your advice on what would cause a Chevrolet 490 cone clutch to chatter when cold, and sometimes stall if not operated very carefully? It is in good adjustment, each spring knob having one-quarter turn of slack and pedal does not touch footboard. I applied pure neatsfoot oil but no improvement. I imagine it is slightly out of line. How is this remedied? It sometimes causes a dull thump like a rear bearing knock which is easily felt but will cease when pedal is pressed. How much play is excessive in this motor? The clutch leather is quite new and worked O. K. all summer.

How much play should a Chevrolet 490 piston have before fitting oversize ones? How tight should the new ones fit?—EDWARD W. BROWN.

Answer—The trouble with your clutch chattering can only be caused by one thing and that is the clutch leather. This, in spite of the fact that it is comparatively new, has become burned or hardened and if neatsfoot oil will not improve it, the only thing to do is to replace it. A cone clutch of this type is selfcentering, and if it were slightly out of line it would make no difference in its operation. When you purchase the new leather, soak it for a day or two in neatsfoot oil and it will last and stay soft much longer. The knock you hear is not in the clutch proper, but is in the clutch yoke and does not affect the operation of the car. It is almost impossible to keep this yoke adjusted so it will make no noise.

If the pistons do not slap and the piston rings have no more than .010 of an inch space at the gap, it should

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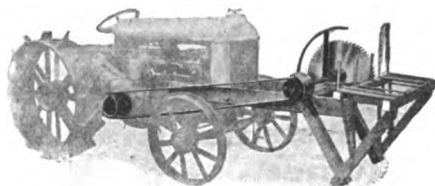
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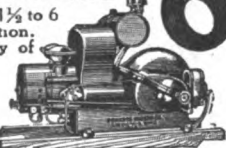
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not be necessary to replace the pistons, regardless of their wear, but generally speaking they will start to slap when the piston has worn from .005 to .010 of an inch. When new pistons are fitted they should be within .002 of an inch under the size of the cylinders, and the rings should have not more than .006 of an inch gap and not less than .004. The reason why pistons and rings are not fitted to the exact size of the cylinder is to allow for the expansion when they become heated from the explosion of the motor.—F. M. SERVICE.



To Overhaul Buick

To the Expert:

I have a 1917 Model E Buick 4 car which I wish to overhaul this winter, and would like to have you give me a few pointers on how to proceed, if possible.

The bearings will probably need taking up and the clutch slips, so I will probably need a new lining. Also the intermediate gear will slip into neutral on a hard pull.

How shall I proceed to get at the transmission? Must I remove rear axle and torsion tube and then disconnect transmission, or must I remove engine from in front? If so, can I, an ordinary mechanic, disconnect starting mechanism and reassemble it properly?

I have always had trouble to shift without racking gears. In fact, I can hardly do so unless engine is idled very low or running very slowly. Is there any way of adjusting transmission to overcome that trouble?—WALTER ALBRIGHT, Bonetraill, N. D.

Answer—We have not the space to go into a thoro overhauling article on the Buick car, but will list briefly the most important points.

1. Bearings. Take up each main bearing and connecting rod separately, that is, as soon as one has been properly fitted loosen it up again. Then when all have been fitted tighten them all up. The purpose of this is so that the tightness of each can be felt on the crank and in adjusting always take out just enough shims, or if none are used, file away just enough metal off the cap to take out the play. When tightened up, the motor should feel just the least bit stiff when cranked for each separate bearing.

2. Pistons and wrist pins. You had best pull out the pistons and if the rings have more than .010 of an inch at their gap when they are fitted in the cylinder, they came out of, replace them with new, being sure the gap between the ends of the new rings is not more than .006 of an inch or less than .004. In-

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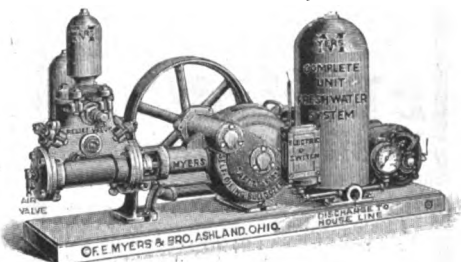
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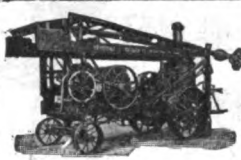


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spect the wrist pins and if they are loose enough in the pistons so they can be moved up and down, you had better replace them with oversize ones. These can be purchased in several different oversizes to take up the wear of the piston.

3. Clutch and transmission. The intermediate gear or the one in which it meshes will be found to be badly worn, so that the teeth are no longer straight and will permit one to slide out of the other. The clutch and transmission can be removed by taking out the bolts where fastened to the engine bed and by removing the four bearing yoke at the universal end, it not being necessary to remove the axle or the motor. If you have never worked on the starting and ignition system, you had better not remove it from the car, as it is quite complicated, and unless it was put back in the exact way it was taken out, it would be out of time.

The trouble you have with the gear clashing when shifting is caused by the transmission brake not working properly. This is a small cone-shaped disc with an asbestos lining, and runs into a cup on the transmission or clutch shaft which stops the gears from spinning when the clutch is disengaged. When you have the transmission out you will be able to adjust this so as to work right or reline it if needed.—F. M. SERVICE.



Hole in Vapor Tube

To the Expert:

Our way of expressing our appreciation of your most valuable service thru **FARM MECHANICS** is to ask of you a continuation of that service.

We have a Fordson that has been run 25 or 30 days. We have never cleaned carbon or ground valves, and it is getting so it will not run without the choke part on, even after it is thoroughly warm. Also it does not give the power that it once did. If we pull the choke 1/16 of an inch too far it will deaden the engine and reduce the speed. If it is not far enough it will backfire. Please advise if the trouble is in the valves or the carburetor?—C. E. MACON, Ramseur, N. C.

Answer—While it probably would not hurt to grind the valves in your tractor the trouble is not there, but is due most likely to a burnt out vapor tube. This would account for the lack of power and the necessity of running with the choke out.

This tube being burnt out is due to operating the tractor with the shunt valve at the "on" position while still running the motor on gasoline, there being no moist kerosene and air mixture

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passing thru it and consequently it becomes very hot and its walls will burn thru. This tube is not expensive and you can replace the old one in a very short space of time, it being removed from the bottom of the exhaust manifold where the exhaust pipe bolts on.—F. M. SERVICE.



Play in Maxwell Shaft

To the Expert:

I have a 1917 Maxwell, model 25, which has a lot of play in the front main bearing of the crankshaft. And as I suppose you know there is no adjustment to that bearing, so don't know just what to do.

Would you advise me to get a new bearing un-reamed and try and grind it down some way so it will make a good fit? I don't think there would be any use in getting a bearing that is reamed, as I am sure there would still be some play. What should be done to make a good job?—ARVID A. BERGDAHL, Skandia, Mich.

Answer—The chances are that the manufacturers carry this bearing in different under sizes to take care of the wear in the crankshaft. If they do not, you can purchase one that has not been reamed, and have a good mechanic measure with a micrometer the exact size of the shaft. Any machine shop will have an expansion reamer that can be adjusted to this exact size. If not, it can be placed on a lathe and turned down to the micrometer measurement.—F. M. SERVICE.



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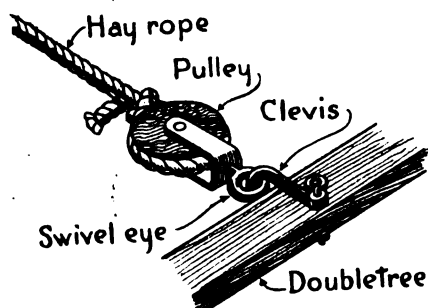
WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

HANDY ANDY'S DEPARTMENT

WHERE FARM MECHANICS READERS CAN PASS ALONG GOOD, TESTED IDEAS.

Hitch for Hay Rope

SOME time ago I read in FARM MECHANICS about a subscriber who would like to know how to hitch a hay rope so that it would not twist and creep up. How I make this hitch is shown in the accompanying illustration and ex-



perience has proven that it is a good one. As will be seen by the drawing I fasten a pulley with a swivel-eye to the double tree with a clevis. One turn around the pulley of the rope and then a knot to hold it is all that is necessary. This will be found a simple method to eliminate the trouble complained of.—C. A. LUTHI, Morris, Minn.

\$1 for an Idea

I, Handy Andy, am famous, because I am found on nearly every farm. When some little thing that would make farm work easier pops into my head I get to work and build it. Farm Mechanics has asked me to pass my ideas along, so as to help everyone do things more easily. I want to pass your ideas along, too. Send them to me, using not more than 200 words, and a pencil sketch or photograph to illustrate it. I will send you \$1 for every idea accepted. Address your letter to me.

HANDY ANDY,
Care Farm Mechanics,
1827 Prairie Ave., Chicago.

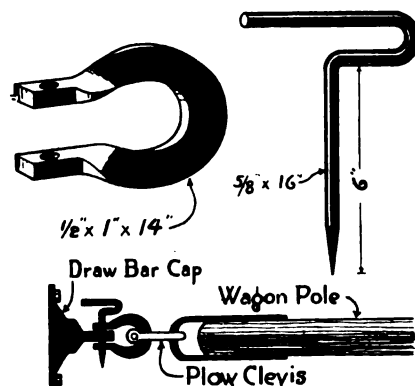
Hay Rick With Ladder

SHOWN in the illustration is a design for a hay rick with ladder that will be found sturdy and make loading more easy. The drawings show better than a written description how the rick and ladder are made and the materials

used for both. I have made several of these pieces of hay equipment and everyone who has used them says that they are most satisfactory and hold the load in good shape.—JAMES F. WELLIVER, Danville, Pa.

Hitch for Wagon and Tractor

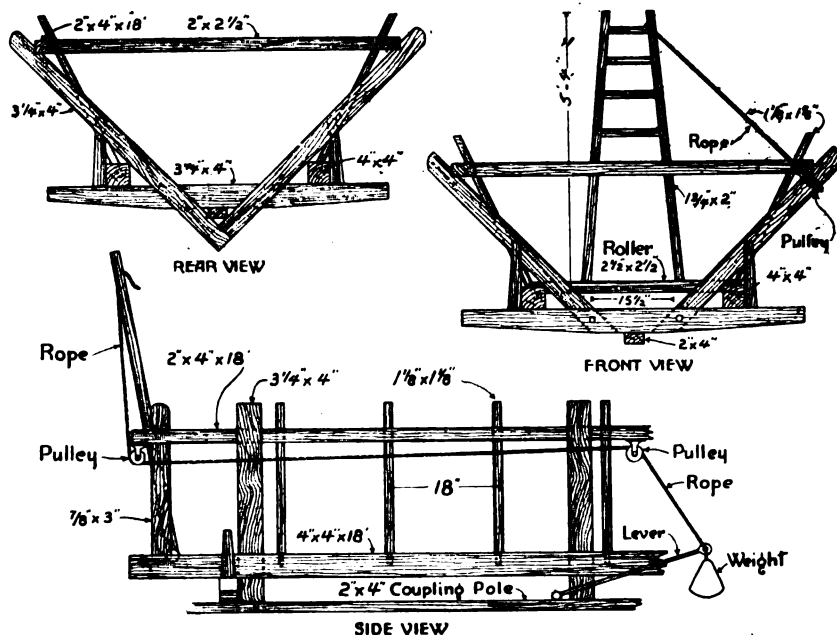
WE draw wagons loaded with hay and grain from the fields with our tractor. For hitching the wagons to the tractor we devised the hitch, shown in the accompanying drawings. As will be



seen there are two clevises, one a regular plow clevis and the other a special clevis we designed and made. The latter is made from a piece of iron one inch wide and one-half inch thick and about 14 inches long. By making it the shape shown in the drawing there is no tendency toward spreading, and it is strong enough to hold anything the tractor can draw, and still light enough to be carried in the tractor tool box. The pin is made from a piece of 5/8-inch steel rod, 16 inches long, bent to the shape shown.—JESSE H. CLARK, JR.

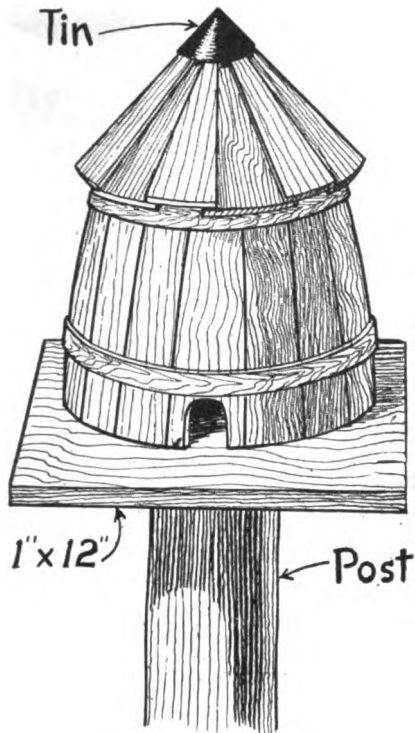
Easily-Made Bird House

HALF of a nail keg makes the main portion of a good bird house. After the keg is sawed in two, one part is nailed to a board about 12 inches square. At the bottom, on one or two sides a small hole is cut out for the birds to enter and leave the house. The conical shaped roof, as shown in the drawing, is made of soft pine boards cut so that



Drawings that Show How the Hay Rick and Ladder Are Constructed and the Materials that Are Needed.

they will taper to the top. These are fastened to the edge of the main portion of the house. By lapping the boards, as shown, they will keep out the rain. The peak is finished by covering it with a



Bird House Made of Half a Nail Keg.

round piece of tin. The base of the house is fastened to the top of a post of any height wanted and set in the yard. The birds will soon discover the home and make their nests there.—H. C. COLEMAN, Hopkins, S. C.



A Lightning-Arrester for the Fence

IT has been estimated that two-thirds of the domesticated stock killed annually by lightning, are killed while standing or grazing along fences.

While all wire fences are dangerous during a thunder storm, the wovenwire fence is relatively safe. Safe because all wires are connected to one another, with ample chance for the charge to get into the ground thru the lowest wire.

But the barbed-wire fence is a real menace in many of the rather arid, western states where the most severe storms come up quickly when everything is as dry as tinder.

The method used by one rancher bears repeating because the process involves but little expense, and it remains effective during the life of the fence. It is this:

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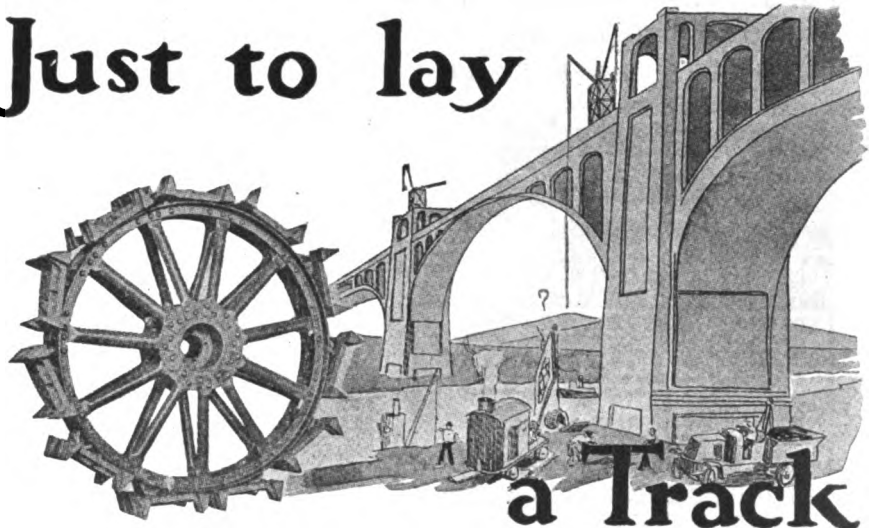


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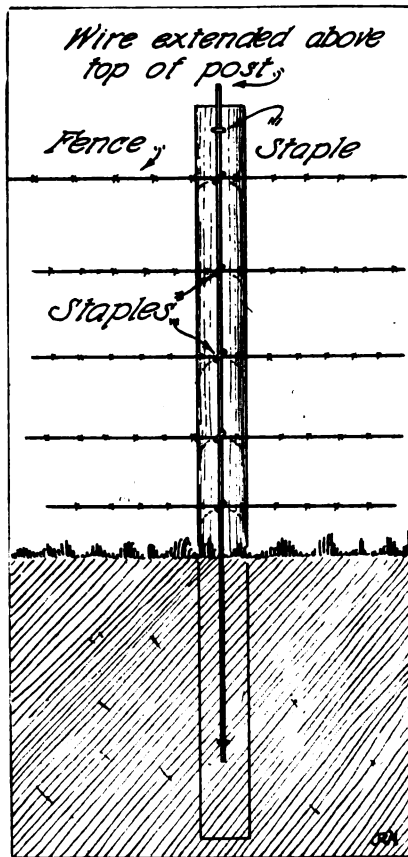
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wire, stapled on in two places to the side
which is to take the fence wire. One end
of this wire projects a few inches above
the post, while the lower end extends



Lightning Arrester on a Wire Fence.

well below the point where the post is
to emerge from the ground.

After the fence posts have been set
(the prepared posts are set alternately
with the ordinary ones) the wires of the
fence are then stapled on as indicated
in the drawing. Thus each wire is
thoroly grounded every two rods.—
D. R. V. H.

+

To Cut Oil Grooves in New Bearings

AFTER a new babbitt bearing is run
the most important thing to give it
the correct finish is to cut the groove for
the oil to evenly distribute it over the
surface. There are various ways in
which this may be done but there is but
one shape which will allow the bearing
to give the best service. This is a groove
with an oval bottom and with a gradual
rise up the side of the bearing from the
center oil hole. The principal reason for
an oval bottom is to prevent the babbitt
from fracturing along the line of the
groove, a trouble usually accompanying
an angle-shaped groove bottom. After
trying as many as a dozen different meth-



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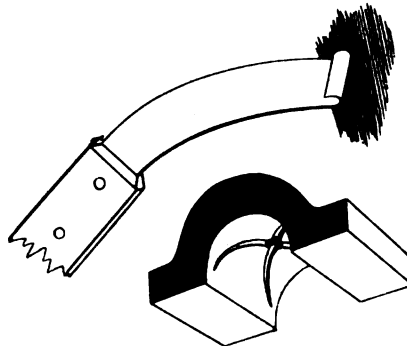
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ods for doing this job I hit on a tool which makes an ideal groove and one which is usually found about any shop and on many farms, if the babbitting job has to be done on the tractor or the thresher at the farm home. This is a



Scraper to Make Oil Grooves in Bearings

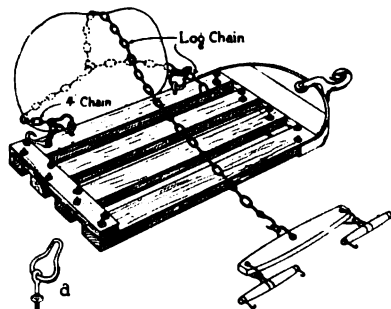
common hoof knife with a turned over point. After the center hole is drilled the point of the knife is started at it and carefully drawn toward a corner of the bearing. As the groove should be deeper at the center than at the outer end the knife can be used to both deepen and widen where wanted.

The blade of the knife makes a very good scraper for fitting the bearing to the cap and trimming off the edges.—G. G. McVICAR.



For Loading Big Stones

HERE is an easy method of loading large stones or boulders onto a stone boat. Have two grab links, bolted on one side of the stoneboat 18 inches apart. Haul the stone boat to the boulder with this side toward it. Hook a



Chain Tackle for Loading Stones.

big log chain into the hooks after passing it around the boulder at the ground and pull it tight. Take another chain and hook it to the chain around the boulder as near the center as possible. The team or tractor is then hitched to the center chain and by pulling the boulder will be tipped over onto the stoneboat. If the rock is round, a block should be placed on the side of the boat away from the rock to stop it from rolling off.—OSCAR J. HUSS, Aneta, N. D.



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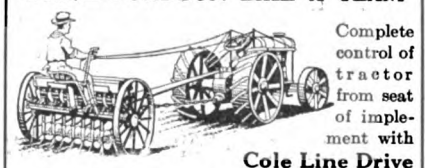
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Facts About Corn

THE wise corn grower will look well to all the factors that tend profitably to increase his crop. Before planting time is at hand careful plans should be made. These plans may deal with but two groups of factors—the first group having to do with seed, the second with producing a favorable environment or plant home.

Under the first head one considers such points as the selection of a variety, acclimation of the seed, selection of the seed, its curing, storage and testing for viability in the early spring. For grain one should select a variety that will mature before frost but that utilizes all the growing season. While for silage a variety that will produce the maximum of grain is ideal, yet it may be so large that frequently frosts might come before the grains are hard.

From the standpoint of environment the proper place in the rotation is significant as is the amount of manure and the method of its application. The time

for plowing and the means of fitting the seed bed may make great difference in the total yield of grain or silage as well as to determine the profit secured from the corn crop and from the general farm operations.

The following statements prepared by Henry L. Dorsey of Connecticut Agricultural College are of interest to corn growers and may prove helpful in arranging for next year's crop or in answering troublesome questions:

1. Smooth dented ears yield better than very rough ones.

2. Shelling tests are of little significance. Trials have shown seed from ears showing a low percent of grain to yield better than from ones with a high percent of grain.

3. Seed from one part of the ear is as valuable as from another. However, the seed from the middle portion of the ear is preferable since a more uniform stand results when mechanical planters are used.

4. A large number of rows on the seed ear is no indication of high productive power.

5. Earliness is apparently associated with low placings of the ears on the stalk. Yet, moderate selecting for low ears has not reduced yields.

6. No change in yield has resulted from growing seed on rich or poor soil.

7. Clover is an ideal crop to precede corn.

8. Fall plowing of turf increases corn yields. It also helps to reduce grub worm and wire worm injury.

9. The seed bed should be harrowed to save water evaporation on dry, windy spring days and to destroy the weeds when small.

10. A moderate application of manure balanced with acid phosphate is the most economical fertilizer treatment.

11. The cheapest cultivation is that done with the harrow before planting. It destroys weeds cheaply and weeds greatly reduce the yield of the most hardy corn varieties.

12. It pays to thin corn if too thick. Excessively thick corn uses plant food to produce leaf and stalk rather than to make grain.

✦
THE wife who takes fifteen minutes from her work to rest before her husband comes home may find he's a lot more pleased than he would have been with an elaborate dinner.

✦
LIVELY chicks come from the eggs laid by hens of good breeding and vitality.

✦
THE records of one dairy improvement association show that last year it contained seven cows that didn't pay even for grain and roughage.

Legumes Demand Proper Treatment

LEGUMES, since they are such a valuable part of agriculture, have a right to demand, as they do, that conditions for their growth shall be as they want them. That alfalfa and red clover, for example, insist on a fair supply of lime in the soil.

If the soil contains limestone, is neutral, or even slightly acid, no lime need be added, but if the soil is very sour, lime should be put on before seeding red clover. Where clover fails frequently or does not thrive and produce a good crop, lime is usually necessary, and should be applied every time clover is seeded at the rate of one ton or more per acre in the form of limestone, or its equivalent in other forms.

Three forms of lime are in general use: Limestone, "hydrated" lime, and burned or quick lime, together with smaller quantities of marl and oyster shells. In 1921, well over 90 per cent of the lime used in New York State was ground limestone, the remainder being divided between burned and "hydrated" lime, says the New York College of Agriculture.

The form of lime to use is the one that gives most calcium carbonate, or its equivalent, of proper fineness, spread on the land for each dollar paid out for lime, freight and labor of hauling and spreading.

For red clover it is usually not necessary to neutralize the acidity fully. Alsi-like stands more acidity, while vetch and white clover, peas and field beans, are still more resistant to soil acidity. Soy beans respond to conditions favorable to red clover. Alfalfa and sweet clover need more lime than does red clover, and it is desirable to know something of the lime content of the subsoil down to 20 to 30 inches below the surface.



Molasses May be Boon to Dairyman

THE farmer who has much low grade and unpalatable roughage which he must feed may find in molasses a means of greatly improving the ration for his livestock. It has been found when roughage is moistened with diluted molasses animals greedily consume it.

The fall and early winter quotations on cane molasses, further, have been such as to make it a relatively cheap feed.

Ordinarily cane molasses contains about 65 per cent sugar, 3.2 per cent protein, 6.1 per cent mineral matter and 25.7 per cent water. Being low in protein, it should be used in place of corn or similar feeds. It seems to have practically the same feeding value pound for pound as corn, where it replaces a part of the corn

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NOTICE TO ADVERTISERS

Forms for the April number of Farm Mechanics will close promptly March 15. New Copy, changes and orders for omissions of advertisements must reach our business office, 1827 Prairie Ave., Chicago, not later than the above date. If new copy is not received by the 15th of the month preceding date of publication the publishers reserve the right to repeat last advertisement on all unexpired contracts.

FARM MECHANICS.

in the ration, in spite of the fact that it contains more water.

This is probably because cane molasses has characteristics lacking in corn. It is even more palatable and more digestible than corn. In addition, it is slightly laxative and is frequently used as an appetizer and conditioner. Like linseed oil meal, it has the power of putting the sleek, glossy coats upon animals which are a sure indication of good health and vigor.

Cane molasses can be fed to all classes of farm livestock except young calves. With them it causes scouring. Its best use, however, is for animals adapted to eating roughage, especially cattle and horses.

For these animals, the molasses may be diluted in proportion of one part by weight of molasses to three parts of water and then sprinkled over the roughage or silage. Corn fodder should, however, be chopped first. Feeders avoid the chief difficulty in using molasses by feeding it in this manner. When given undiluted, the thick, sticky nature of the molasses causes practical difficulties.

No benefit will be obtained from feeding molasses to cattle or horses unless

each receives from one pint to one quart or from 1½ pounds to 3 pounds a day. A large amount can be fed, but usually not more than 5 or 6 pounds should be given; otherwise it loses its superiority over corn as a feed.



ROAD tar and grease stains are softened by kerosene, which in turn can be removed by gasoline.



SOME little kitchen utensils of her own when she's small will make Mary want to help mother more when she's older.



A PACKAGE of bird seed and some sunflower seed cost little for the insurance against insects thru the birds they keep alive during winter.



HELP break up that cold by drinking plenty of water and going on a vegetable and fruit diet.



FOR starting the fire in a hurry or speeding up a late breakfast, dry corn cobs can't be "beat."

The Great Bell of Atri

THE village of Atri had a great bell that was rung only in time of need. For years it had been unused, for Atri was prosperous and content. Its rope, covered with green vines, trailed to the ground. One day a starving horse turned out to shift for himself, sized the fresh green tendrils in his teeth. The bell above him began to ring, attention was called to the predicament of the poor beast, and he became a well-fed ward of the town.

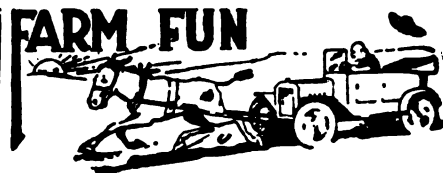
Advertising is a bell that is continually ringing to call your attention to something you need and ought to have.

Manufacturers, who are making something they think you will want are using its clarion notes to attract you to their wares.

Do you read the advertising? Most farmers do. They are the wise shoppers—the economical buyers—the ones who are strictly up-to-date on the opportunities for saving money or spending it to greatest advantage.

Read the advertisements. They will tell you of many things you need. Read them to save steps—to save money. Read the advertisements regularly. It pays.

—*Farm Mechanics Magazine*



As Per Schedule

Two farmers met on a country road, and pulled up their teams.

"Si," said Josh, "I've got a mule with distemper. What did you give that one of yours when he had it?"

"Turpentine."

A week later they met again.

"Say, Si, I gave my mule turpentine, and it killed him."

"Killed mine, too."



Following Medicine

"I heard your son was an undertaker. I thought you said he was a physician."

"Not at all. I just said he followed the medical profession."



Short Conversation

Blackstone: Money talks, they say.

Webster: Yes, but mine seldom gets a chance to say more than "Goodby," when my wife gets her hands on it!



One on Him

Isaac: "You should pull the curtains down ven you kiss your wife. I saw you last night."

Abie: "The choke's on you; I wasn't home last night."



Of Course

Little Nellie's mother was entertaining a famous aviator. After he had finished a thrilling story, little daughter sighed deeply and said:

"I've clear forgot how it feels to sail thru the air."

"Why, Nellie," said her mother, in a shocked voice, "you were never in the air in your life."

"Gracious, Mamma, have you forgot that the stork brought me?"



An Expert

Blackstone: "Dobbs always has an axe to grind."

Webster: "Yes, and the practice seems to have sharpened his wits!"



A Fact, Not Theory

Georgie: "Ma, if the baby was to eat tadpoles, would they give him a bass voice like a frog?"

Mother: "Good gracious, no! They'd kill him!"

Georgie: "Well, they didn't!"

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FARM

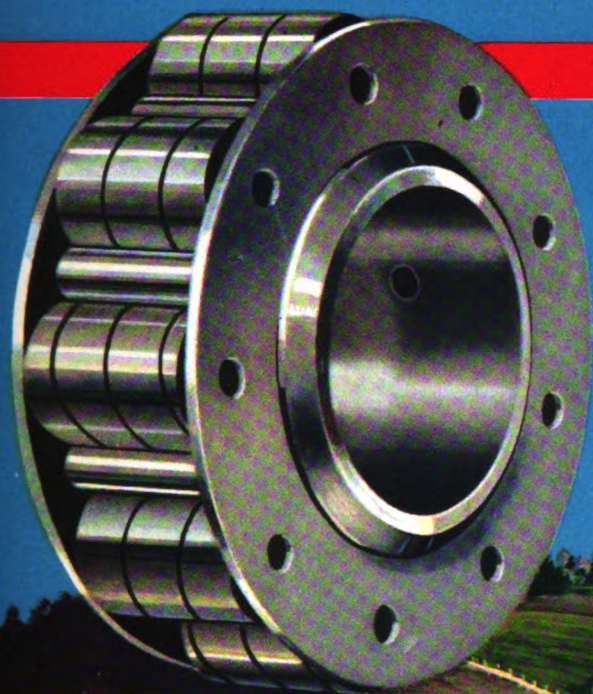
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MECHANICS

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A Monthly Magazine Featuring Farm Improvements, Machinery,
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HYATT

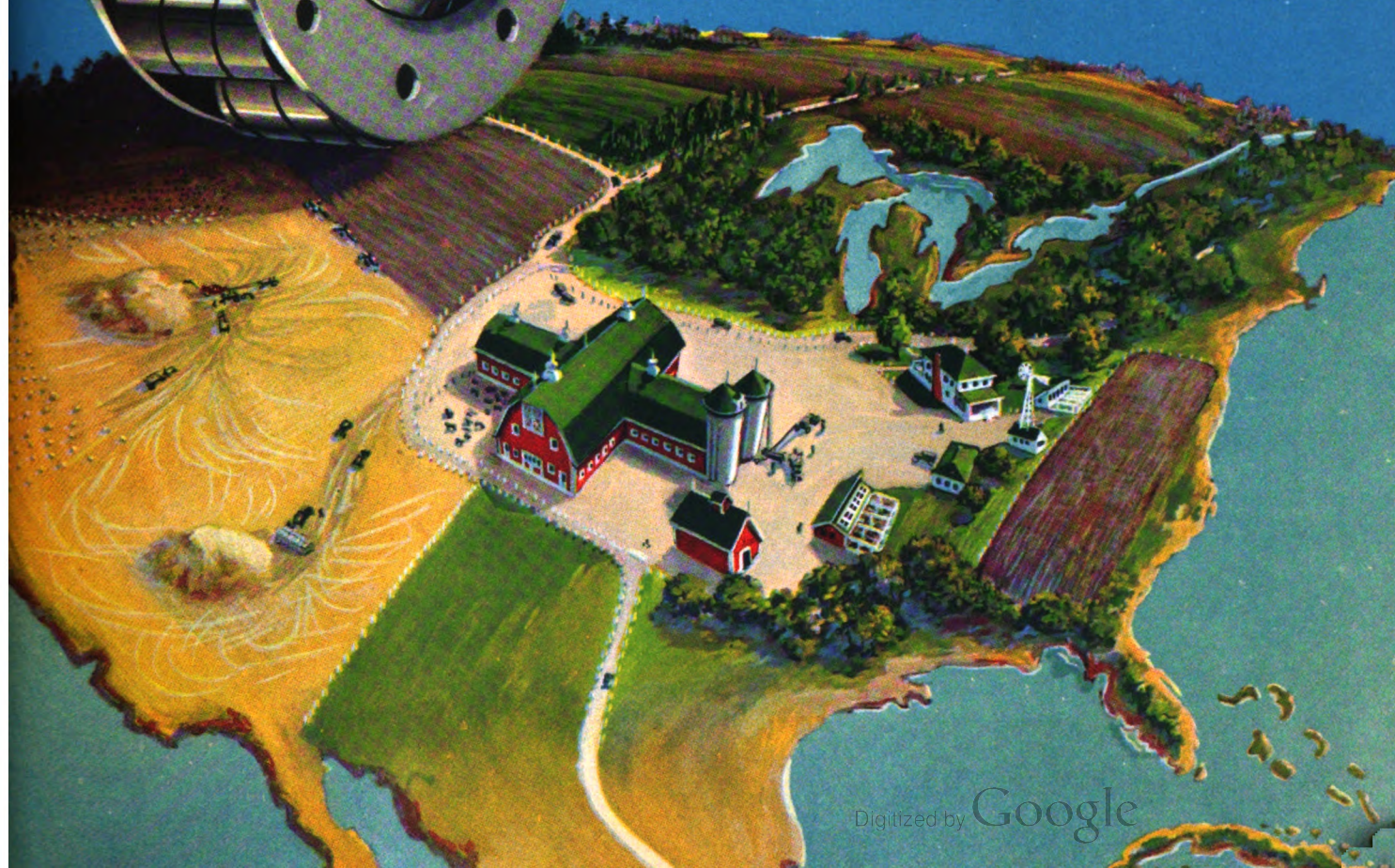
ROLLER BEARINGS

On thousands of farms in the United States and Canada Hyatt roller bearings are recognized as a valuable factor in reducing power farming costs and increasing the farmer's profits.

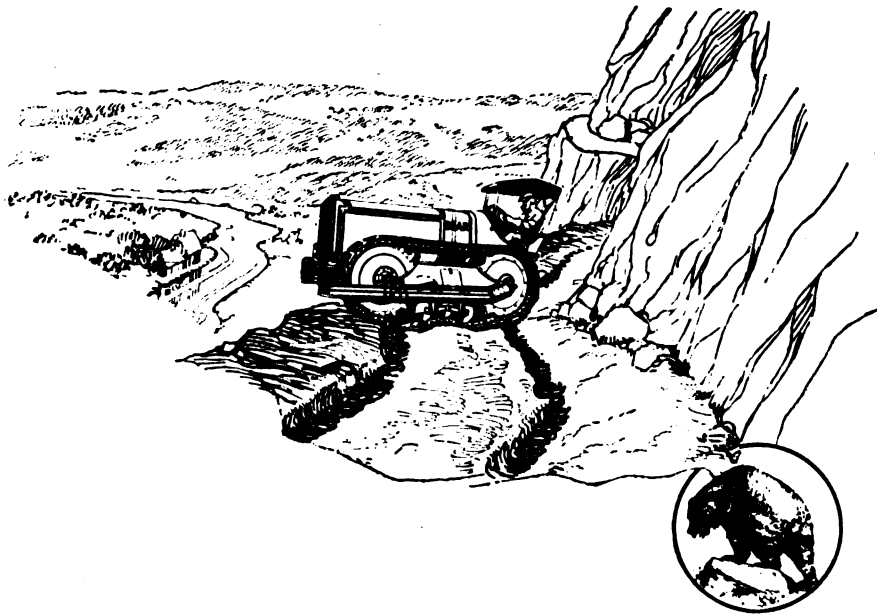
For a complete list of Hyatt equipped farm implements and tractors write:

Hyatt Roller Bearing Company

Newark	Detroit	Chicago	San Francisco
Worcester	Milwaukee	Huntington	Minneapolis
		Buffalo	Indianapolis
			Philadelphia
			Cleveland
			Pittsburgh



The Bear Tractor



Compactness

THE need of turning a tractor on a narrow mountain road—just a ledge overhanging a precipice—may seldom occur. Yet the *compactness* which makes it possible to do so is of importance to every tractor user, whether he operates in the mountains or on the plains, in the forest or on the desert. The extreme *compactness* of the Bear, like its big reserve power and its remarkable flexibility, may not be utilized constantly but the ability of the Bear to turn around in a six-foot radius is an advantage that each tractor owner pictures under his own particular conditions.

Remember, in considering the Bear dimensions of 125 $\frac{1}{4}$ " in length, 62 $\frac{1}{2}$ " in width and 54" in height, exclusive of the top, you are dealing, not with a small-power machine but, with a powerful tractor with 25 normally rated horsepower AT the drawbar and 25 *additional* horsepower awaiting command. Only when it is realized that the Bear develops 50 horsepower AT the drawbar—25 for the average pull and 50 for the extra hard pull—is its extreme *compactness* fully appreciated.

Bear features include: Reserve Power — 100% overload capacity for emergency. Weight — 2 tons lighter than competing tractors. Flexibility — 16-inch oscillation of front wheels. Compactness—6 feet turning radius. Lubrication—once-a-month oiling. Mechanical Efficiency — 80% of the engine's power delivered to the drawbar. Track Roller System—rollers force track to grip ground throughout full length. Track—upkeep lowest on record. Track Adjustor—self-aligning. Drawbar—resilient; whiffletree hitch. Bearings—36 annular ball bearings. Control—automobile type. Seat—spring-cushioned; upholstered. Engine—heavy-duty; 70 h.p. maximum.

The very fact that the Bear is the highest class tractor ever built is largely responsible for it being the most discussed tractor, especially among men who measure values in terms of cost *per unit of work accomplished*. And, as it is *performance* that determines this cost, these experienced tractor users are buying Bear Tractors because they mean the doing of work cheaper.

Every tractor user, dealer and distributor should send at once for copy of the catalog.

Distributors and dealers are invited to ask regarding open territory.

Franchises are being let rapidly.

25-35 \$4250

BEAR TRACTORS INC. 5314 PARK PLACE NEW YORK CITY

The Tractor that Delivers its Power to the Drawbar



Make sure it is a *power* plant, too

You are going to have electricity some day soon—for bright, safe light; for the iron that heats itself; for the washing machine with muscles of steel; for the handy little motor that says, "I'll chop the feed, shell the corn, and pump the water."

But the electricity you get will *not* be the kind you need unless you have a *power* plant as well as a lighting plant—a plant supplying the kind of service that the Kohler Automatic is built to deliver.

Here is a *lighting* plant whose automatic operation gives you

city convenience, whose 110 volt current will light your farthest building, whose 1,500 watt capacity will meet every demand.

And here is a *real power* plant, too—without storage batteries (except for starting). Its power flows direct from the generator to the job; its rated capacity (2 electrical horsepower) is on tap *all the time* and for *any length of time*.

Its 110 volt current carries power to points that low-voltage current could not reach. You don't have to visit the plant either, for the Kohler is automatic for power as

well as light. You use city standard appliances—a genuine economy and convenience.

That is the service the Kohler gives. The service it receives is simply the little attention required by as fine a *four-cylinder* engine as any motor car can boast—quiet, reliable, economical.

The cost of the Kohler Automatic, measured by its ability and quality, is distinctly low. Convenient payments will buy it.

Use the coupon below and get the full story of the Kohler Automatic and the great institution behind it.

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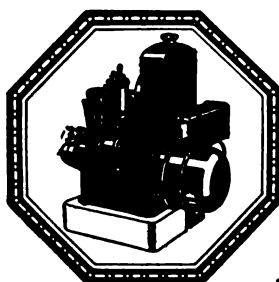
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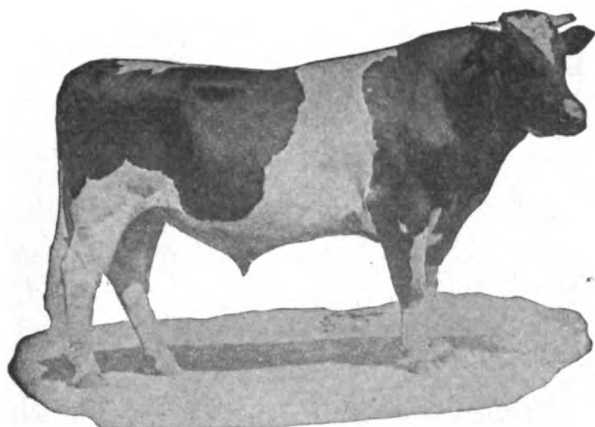
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CREATOR—barely five years old has the following remarkable list of A. R. O. two-year olds: 16 between 20 lbs. and 26 lbs. of butter in seven days. His first daughter to complete a year made 20,694.6 lbs. milk and 948 lbs. butter as a senior yearling. This is the second highest record in her class.


The average production of his daughters is greater than that of any other bull of the breed his age.

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8. Pabet Pontiac Clover 3d.....	2	0	25	450.3	22.03
9. Pabet Creator Sandes.....	2	1	0	401.0	21.61
10. Pabet Kinnikinnie 2d.....	1	11	18	455.7	21.41
11. Pabet Pontiac Johanna.....	2	8	24	382.3	21.41
12. Pabet Maplecrest Ormsby Belle 3d.....	2	2	0	406.3	21.30
13. Pabet Catnip 2d.....	2	1	1	447.1	20.51
14. Pabet Virginia Johanna 2d.....	2	4	23	427.1	20.30
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16. Pabet Marigold 3d.....	2	1	1	469.8	20.06
17. Pabet Edith De Kol Burke Hen- gerveld.....	2	7	13	404.8	19.76
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19. Pabet Schleystrain DeKol Pon- tiao.....	2	6	9	392.4	18.91
20. Pabet Clematis 2d.....	2	4	13	400.2	18.78
21. Pabet Belle Douglas DeKol.....	2	3	3	401.1	18.68
22. Pabet Arbutus Creator.....	2	4	2	390.3	17.79
23. Pabet Clyde Meethilde.....	2	4	24	327.2	16.32

You can buy sons of Creator at a lower figure today than at any future date. Write for descriptions and extended pedigrees.

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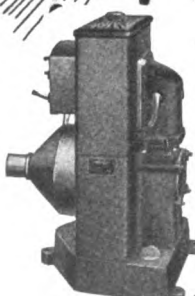
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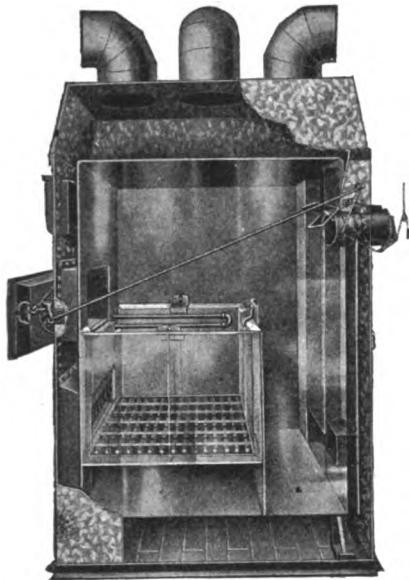
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Furnaces and then-there are*



Every Seam Welded—Never Leaks

HESS FURNACES

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The superior advantage of the WELDED STEEL HESS FURNACES are so unusual and so desirable that their investigation will be a revelation to you.

For All Classes of Buildings

You will find the HESS admirably adapted to heating all homes, from the modest bungalow up. Don't decide on a heating plant until you know the whole story of the HESS—the furnace that gives universal satisfaction with surprisingly economical maintenance. We have prepared an interesting booklet, with facts and proofs written in a clear, understandable manner, that you should have. It will be sent to you on request. Fill out and mail coupon below.

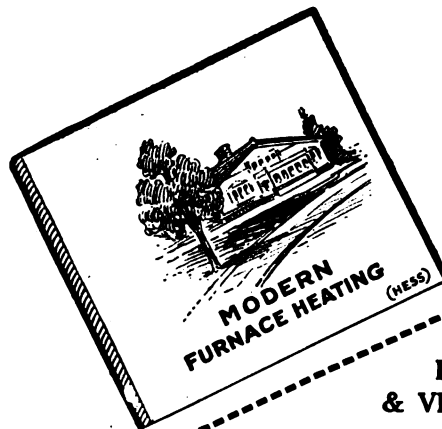
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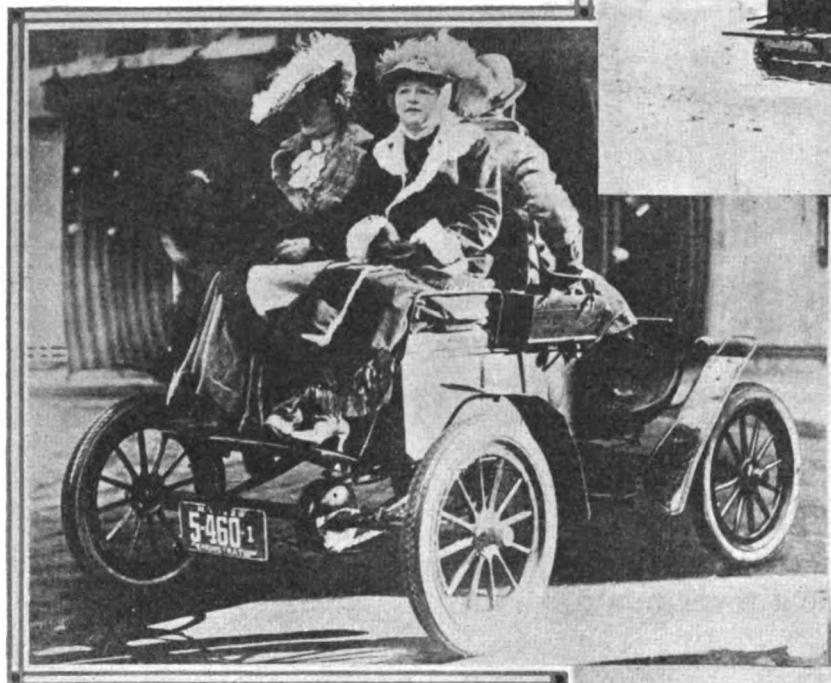
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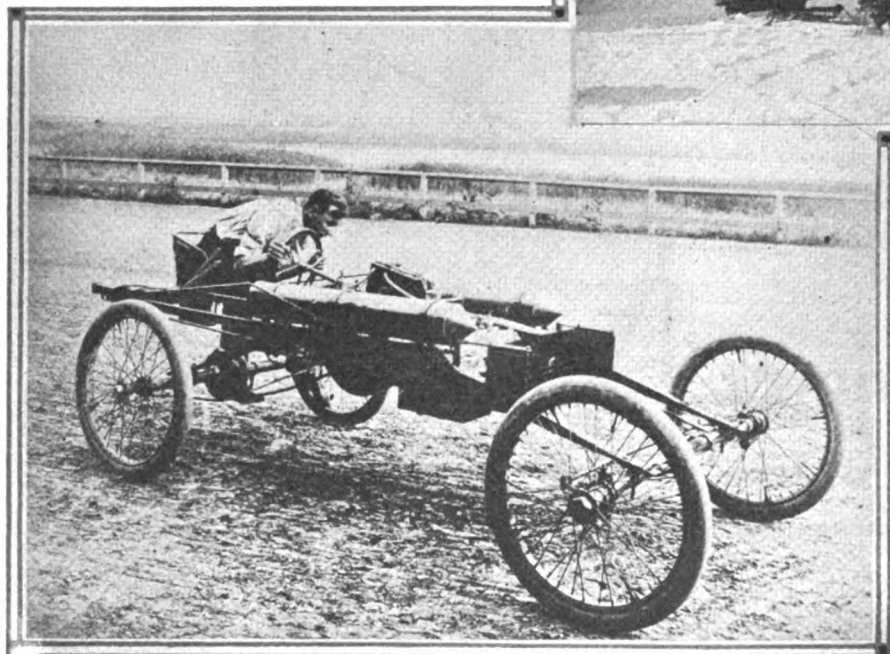
BUCKING THE SNOW DRIFTS. The crawler tractor has been put to work in many cities helping to clear way the snow, which in the East has been unusually heavy this winter. The picture shows a tractor equipped with a scoop and buckets on a belt, which carries the snow back and to one side of the street.



BELOW IS ANOTHER USE FOR THE TRACTOR. This machine, its rear wheels equipped with broad treads, is used in an eastern seaport town for all sorts of hauling jobs. The large motor boat, mounted on sled runners, was pulled out of the water and taken to its winter quarters.

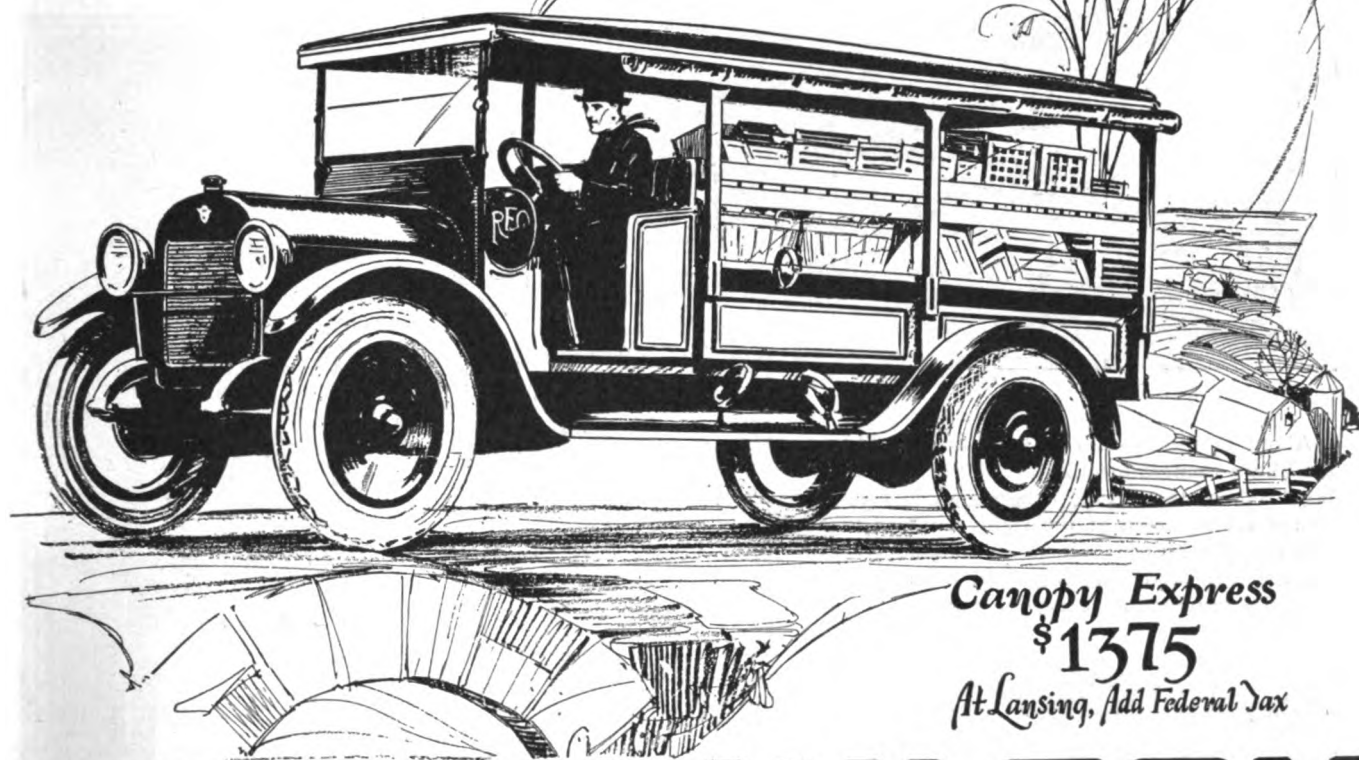


HOW TIMES HAVE CHANGED. During the New York automobile show two women donned the costumes of a quarter of a century ago and rode in a "horseless carriage" of the vintage of 1900. The car still runs, altho it makes a lot of noise.



And 26 YEARS AGO this racing car was an object of great curiosity—so much so that it travelled with Barnum & Bailey's circus and the curious paid admission to get a look at it. This car made a record of 5 miles in 6½ minutes, which is quite a contrast to the 120 miles and more an hour the modern autos travel.

The Vital Factor in Rural Transportation



Canopy Express
\$1375
At Lansing, Add Federal Tax

SPEED WAGON



THE nation's highways are Speed Wagon routes. Through fleetness of travel and certainty of performance the Speed Wagon has provided a rural rapid-transit system of dollars-and-cents value.

Because of its worth-while load capacity of 2,500 pounds—passenger car speed and riding smoothness—traction-ability for sand roads or plowed fields—brute power for the hills—sure-footedness for the slippery stretches—and stamina that keeps it youthful for a hundred thousand miles or more—

The Speed Wagon is logically the most economical haulage unit for agricultural service.

Ask for a copy of the Farm Folder.

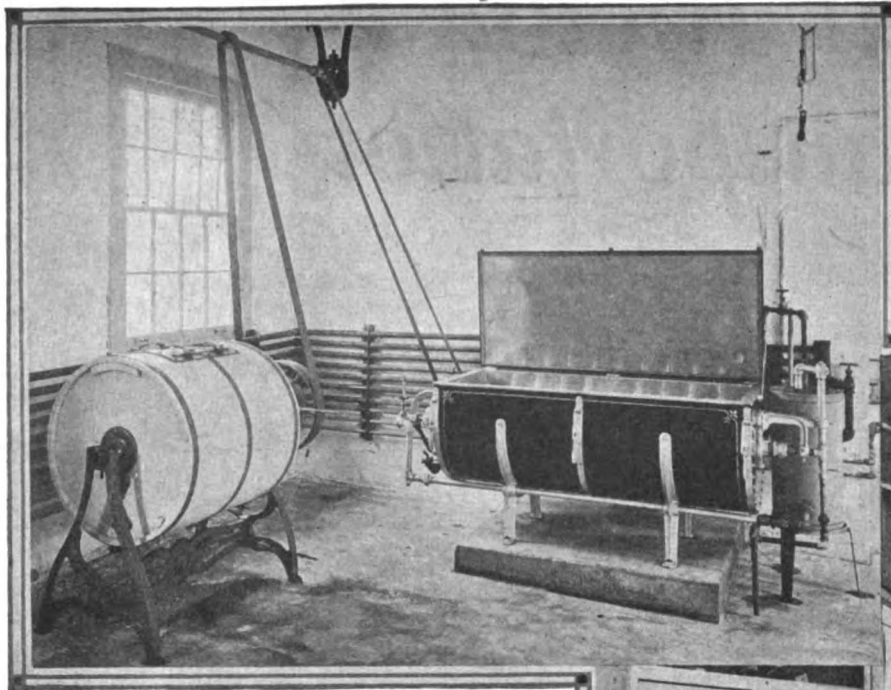
The Speed Wagon is supplied in twelve standard body styles.

More than 75,000 Speed Wagons are serving in farming and nearly 300 other lines of business.

Electric lighting, electric starting, pneumatic cord tires and demountable rims are standard equipment.

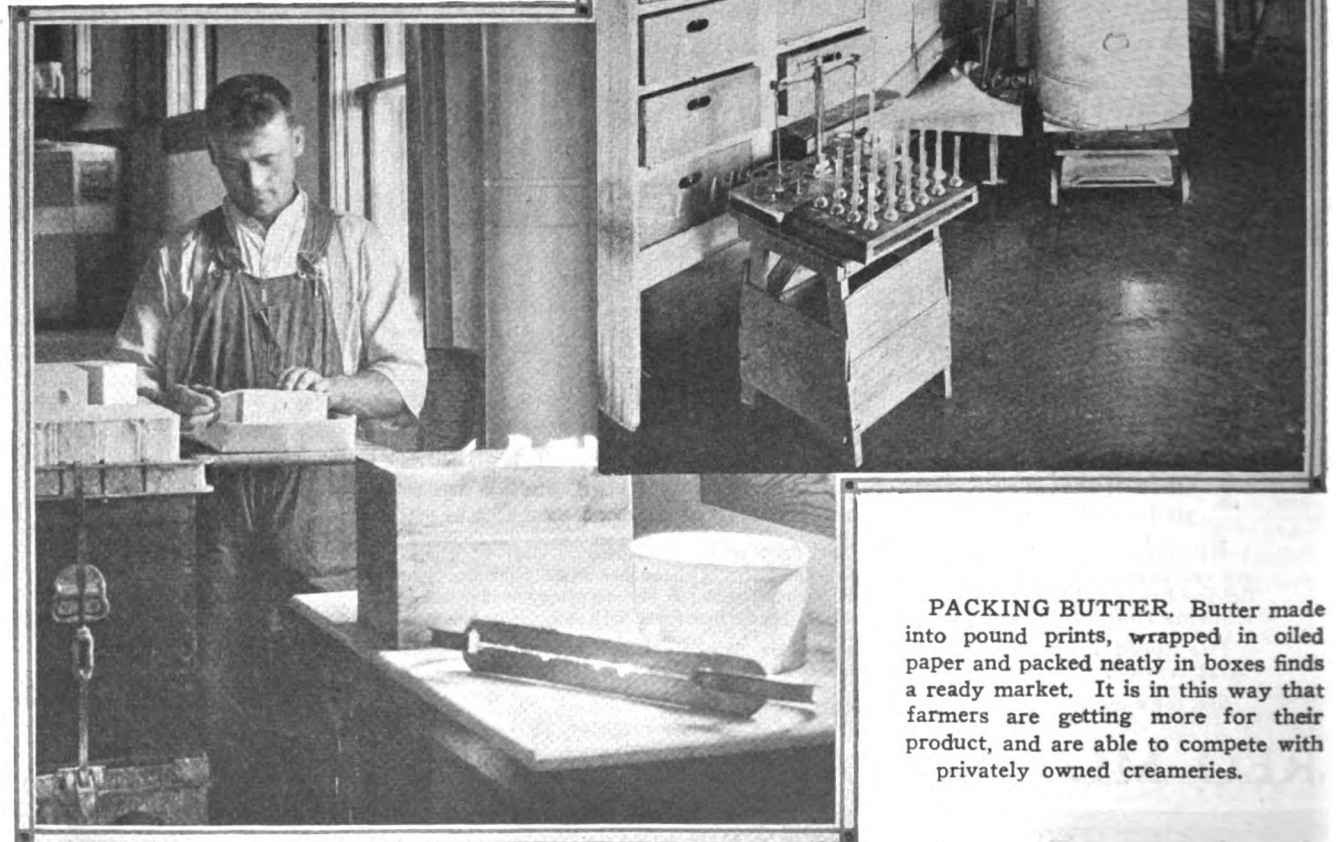
It is manufactured—not assembled—in the big Reo Shops.

REO MOTOR CAR COMPANY, Lansing, Mich.



CO-OPERATIVE CREAM-ERIES. To provide a market for milk and cream, farmers in many sections have established co-operative creameries. The pictures on this page show several views of the modern equipment used in these creameries.

Above is the Interior of the Churning Room, the Churn Being Shown at the Left and the Cooling Tank at the Right. The cream is received in the room shown at the right, samples taken and tested for butter fat and then dumped into the receiving and weighing tank, from which it flows by gravity to the cooling tank.



PACKING BUTTER. Butter made into pound prints, wrapped in oiled paper and packed neatly in boxes finds a ready market. It is in this way that farmers are getting more for their product, and are able to compete with privately owned creameries.

It's Here at Last ~the Perfect Power Plow!

THE Fordson owner now has the advantage of a vastly improved idea in plow design. Roderick Lean Mfg. Co., builders of the famous Automatic Engine Discs for the Fordson, are the makers of this new plow, known as the Ferguson Plow, the Unit Plow for the Fordson.

Built by ~ *Roderick Lean*

The Big Features of the Ferguson

BUILT of alloy steel, greater strength with less weight. Beams and coulter standards guaranteed, not to bend or break.

A power plow—becomes an integral unit with the tractor.

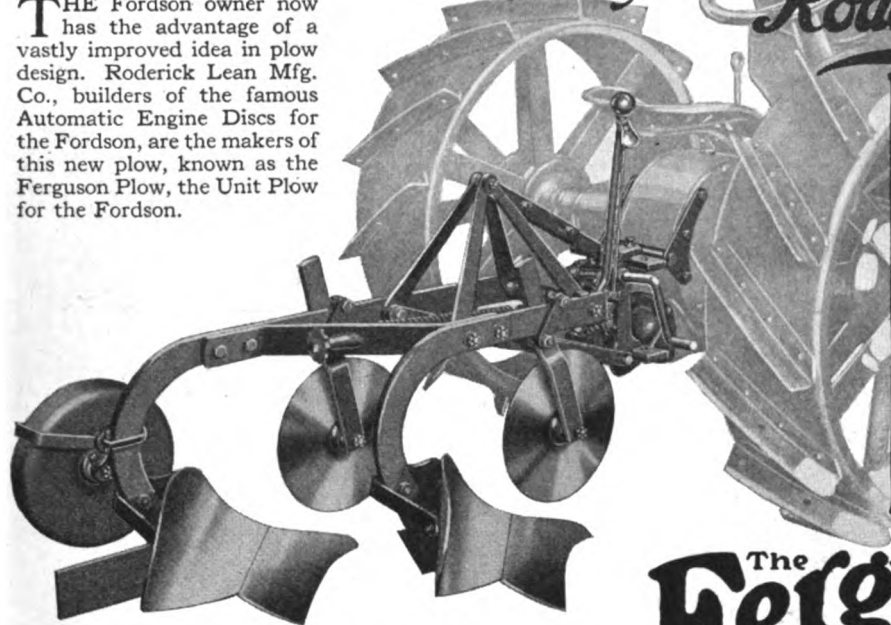
Gets closely into corners, requires less headland. As quickly attached and detached as any tractor plow.

Flexible up and down and sideways. Plows proper depth at all times. No offset hitches required.

Length—only 57 inches. Light draft. Saves gas and oil, wear and tear. Has only one lever. No ropes, no sprockets, no complicated parts or adjustments.

Only two adjustments to make. Gauge wheel adjusts depth of plowing. Leveling crank levels the bottoms.

Bottoms supplied for practically all conditions.



The Ferguson Plow
THE UNIT PLOW FOR THE FORDSON

HERE, unquestionably, is one of the greatest achievements in the agricultural world. Not simply a tractor plow

—but a new-in-principle, radically different, vastly better unit plow, giving greater tractor efficiency and superior plowing results. Its very simplicity makes the Ferguson Plow a remarkable engineering achievement. Its light weight, close hitch and unusual application of draft and control, all provide the utmost in ease of handling. No other tractor plow is so simple, so easy to use.

Half the Length—Half the Weight!

*and Immeasurably Stronger
Because Built of Alloy Steel*

THINK of a tractor plow only 57 inches long—approximately half as long as other Fordson plows—and half the weight. Method of attachment and application of the draft—not dead weight—keeps this plow in the ground.

The Ferguson Plow is the first farm implement to be built of alloy steel, heat treated—the marvelously tough, strong, processed steel used in the automobile industry. All the way through, the Ferguson Plow is an engineering achievement—and its price will please you.

Actually a Power Plow

THE FERGUSON PLOW is not simply hitched, but is easily and quickly, yet firmly attached, becoming a unit with the tractor and operating as a part of the tractor itself. Unit-built means that this plow can be easily backed any place, gets closely into corners, and requires but half the headland of other tractor plows. The plow is flexible both up and down and sideways—plows perfectly on any level, and always at an even depth. Offset hitches are never necessary. The line of draft is under and in front of the rear axle of the tractor.

Write Us Today—and See Your FORDSON Dealer

EVERY farmer in America should get first hand information about the Ferguson Plow.

See your Fordson dealer—but, first of all, mail the coupon for complete description. Get posted at once on the world's greatest tractor plow.

Roderick Lean Mfg. Company, Dept. "B", Mansfield, Ohio, U.S.A.

F.M.

Roderick Lean Mfg. Co.,
Dept. B

Mansfield, Ohio

Gentlemen: Please send all the facts on the Ferguson Plow.

Name _____

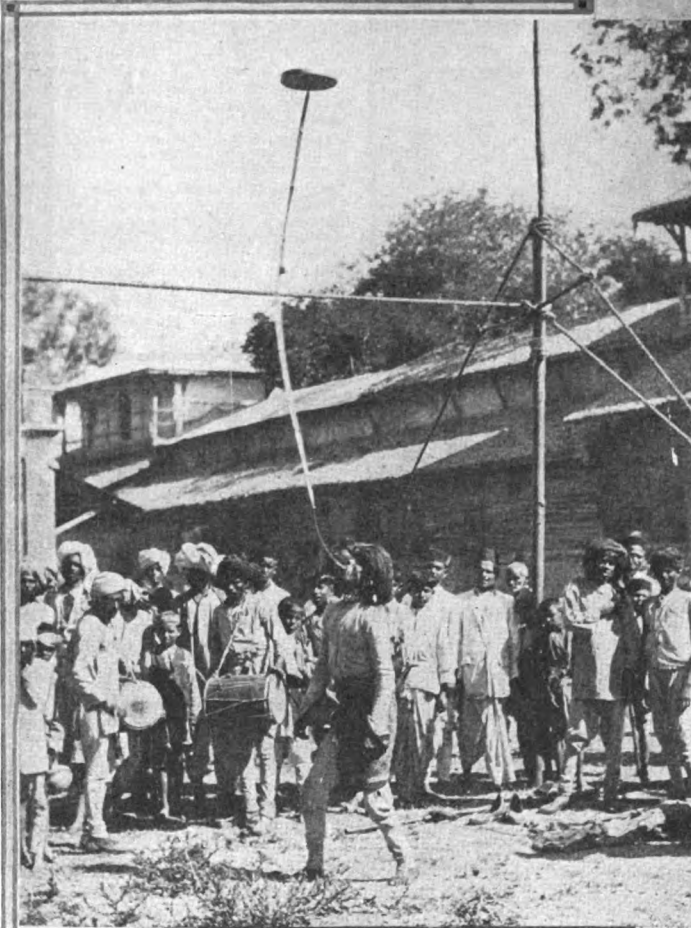
Address _____

WOMEN PLAY BARNYARD GOLF. Pitching horse shoes has become a most popular sport—so popular, in fact, that tournaments draw a large number of contestants. The picture shows Miss Nell Martin, of the Oglethorpe Preparatory School, Norcross, Ga. She is one of the most proficient tossers of the shoes in the school.

STREET CIRCUS IN INDIA. Below is shown the actors in a traveling circus in India. The performers take up a collection, after pitching their apparatus on the street.



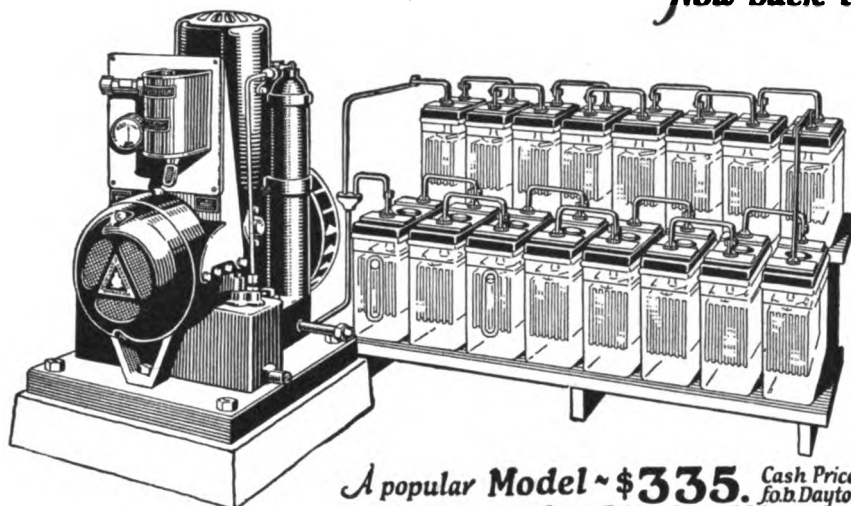
WINTER FUN. Where there is much snow there is skiing. These youngsters have solved the labor problem by hitching up a team and taking a ride on the skis.



Dependable

DELCO-LIGHT

Now back to 1917 Prices



A popular Model ~ \$335. Cash Price f.o.b. Dayton
25 Styles and Sizes - Prices from \$260 up
Sold on exceptionally easy terms



Special Delco-Light Set of Quality Fixtures

\$12

F.O.B. DAYTON
 Sold only with
 DELCO-LIGHT



We believe that you will be surprised at the small amount of money it will take to put electric light and power into your home.

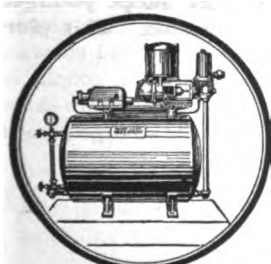
We suggest that you get in touch with the Delco-Light dealer in your vicinity to find out what it would really cost to install complete the Delco-Light fitted to your needs.

If desired, you can buy your Delco-Light on easy terms.

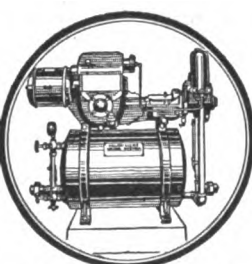
DELCO-LIGHT COMPANY, DAYTON, OHIO
Subsidiary of General Motors Corporation

Also makers of the Delco-Light Water System, Delco-Light Washing Machine and Frigidaire, the Electric Refrigerator. All products made for 32 and 110 volt Direct or Alternating Current Service.

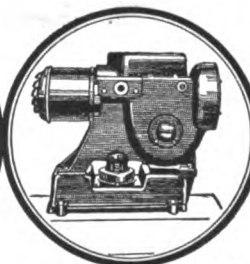
Owners of Delco-Light Plants can avail themselves of the conveniences offered by Delco-Light Products, which are made for AC or DC current for use in country or city homes.



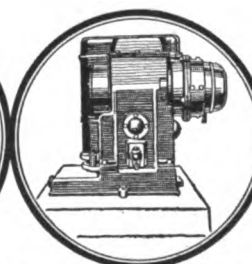
Delco-Light Shallow Well Pump \$125 f. o. b. Dayton



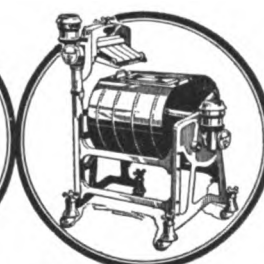
Delco-Light Shallow Well Pump \$125 f. o. b. Dayton



Delco-Light 1/4 h.p. Deep Well Pump \$225 f. o. b. Dayton

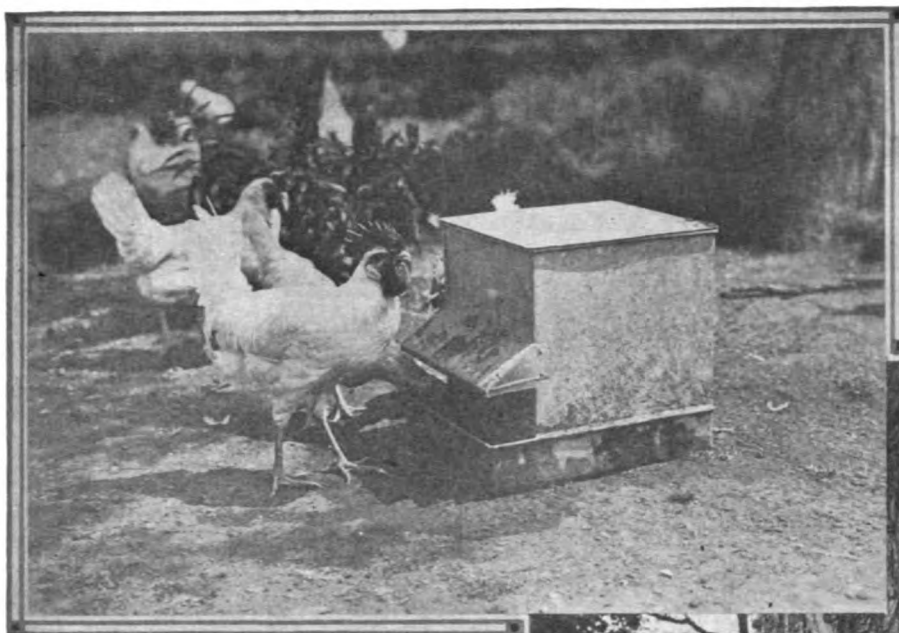


Delco-Light 1/2 h.p. Deep Well Pump \$300 f. o. b. Dayton



Delco-Light Washing Machine \$125 f. o. b. Dayton

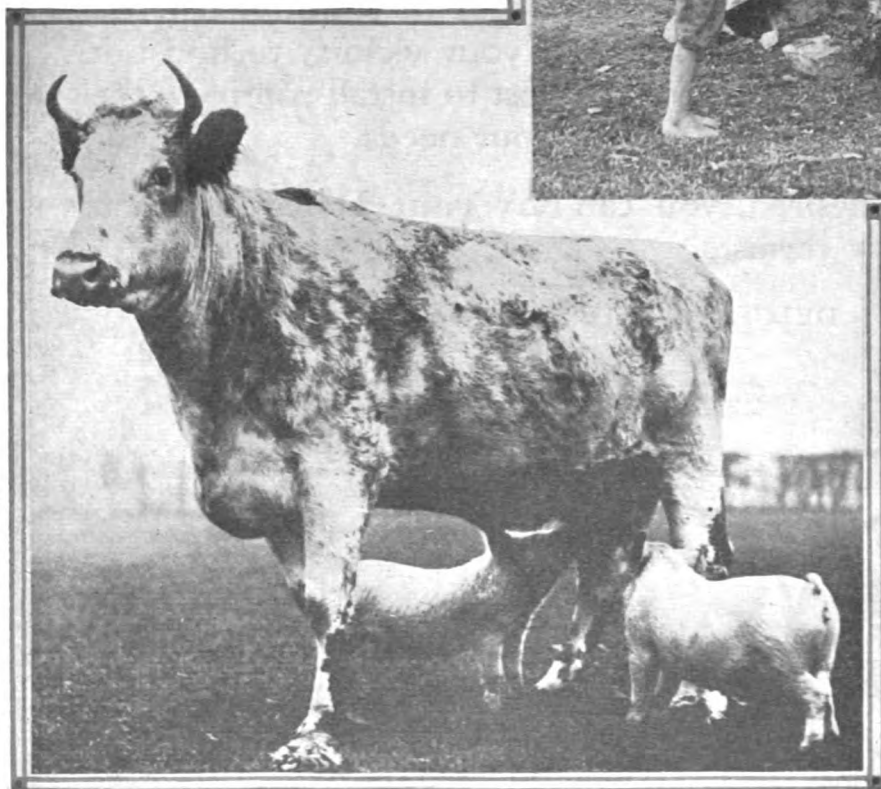
WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS



IT'S GREAT TO BE A FARM BOY. Little Carl Lemle is proud of his pony "Joel" and gives his small brothers and sisters a ride every day when the weather is good. Owning a pony is one of the joys the farm boy has that is denied most of his city brothers.

FRESH WATER FOR THE FLOCK.

A supply of fresh water always available is one of the needs of the farm poultry flock. This galvanized fountain does that very thing. It keeps the water clean, does not waste it while it is ready for the birds when they want a drink. Placed in a shady spot of the yard or orchard in summer it helps keep the chickens healthy and growing.



STRANGE CHILDREN. Cows have been named the "foster mothers of the human race," but often times they adopt youngsters of the brute animals. This picture was taken in England and shows a cow that has adopted a couple of young pigs, who appear to have taken kindly to their strange parent.

The Work of the Month



A COLD April the barn will fill," is an adage that may be interpreted into a warning not to plant before there is a reasonable certainty of no recurrence of frosts. This, of course, applies only to the north and north central states. As a rule, government reports show, killing frosts are not experienced south of Kentucky, Missouri and Kansas, or a line paralleling those borders. However, seed bed preparation may go forward as the weather permits, providing it is not too far in advance of planting time, as the usual April rains may make it necessary to do the work a second time.



AS April brings real spring weather, it causes a renewal of activity on the farm. Even tho it is too early to do much field work, there is a crop of livestock to be taken care of during the month. Sixty per cent of all pigs born are farrowed in March, April and May. The lambs are arriving, and the eggs are hatching. Care expended on the young stock is productive labor.



PROPER care and careful feeding of the sows and their litters give the pigs a good start. While they should have exercise, and an opportunity to be outdoors, they also need a chance to get under cover to prevent chilling, and when the weather is wet. A damp, chill day is when the youngsters need warm, clean, dry quarters.



DURING the first two or three weeks, incubator hatched chicks need a lot of care. Frequent visits to the brooder house to see that the heater is working properly and that the chicks are warm enough so they will not crowd mean more healthy chicks and saving a greater part of the hatch. Hens and their broods need watching, especially on bad days. The hens should be confined in the brooder coops for at least two weeks, while the chicks should be able to range on clean ground.



AS the pasture grows green there is an inclination to give the cows an airing after their winter indoors. It is good policy to keep up the normal quantity of feed or near that amount, as the young grass contains a large percentage of water and has not much nourishment. Danger of tainted milk is eliminated by taking the cows up two or three hours before milking.

HEAVY spring rains usually are accompanied by lighting, especially as the season advances. Inspect the lightning rods and the cables. One may have become loose, in which case there is danger that it will not perform its duty in case it is struck.



UNLESS the farm machinery and tools have been thoroly inspected and necessary repairs or adjustments made, one of the frequent rainy days of April cannot be better spent than in doing this work. When the actual field work begins there is little time for doing anything else, and it is an easy matter to lose a good day, thru a breaking down of a machine.



HOUSE cleaning time is a busy one for the women-folks. Men, usually, look upon this annual household upheaval as something outside their mission in life, but still are pressed into service for the heavier tasks. This is the time when home conveniences are appreciated. A basement heating plant eliminates taking down stoves and the consequent dirt, besides giving better service during the cold months. An electric light plant furnishes power for a vacuum sweeper, which invites more frequent cleaning of the carpets or rugs, and fewer tired arms when they make their annual trip to the line.



SCREENS for the windows of the home and barn may need repairs or painting. This is a good time to do the work. It soon will be fly time and screens put in place in advance of the arrival of the pests will keep them out. A postponement may mean flies in the house before there comes a day when the screens can be put up.



IF the seed corn has not yet been tested, test it. If the small grain seed has not yet been cleaned, clean it. Also test the latter for germination. Planting fertile seed, free from disease, means better crops and more profits. Bad seed requires just as much labor to bring to a harvest as good seed.



THERE are many questions that arise in farmers' minds that they are "going to ask the county agent about when they see him." Jot them down in a notebook. Then when you are in the county agent's office, you will not have forgotten something important.



Belt Power on the Farm

BELT POWER—hardly a day passes but what you could use it—for threshing your grain, sawing wood, filling your silo, pumping water—for any job at hand. And the tractor is the ideal source of power for such work.

Buy a tractor—and you will have an all-purpose power plant for every farm need. And remember this—for a tractor to deliver all of its power to the driven machine, it should be equipped with Rockwood, *The Drive Pulley*.

Because of its unique end-grain fibre construction, Rockwood, *The Drive Pulley* grips the belt as no other pulley possibly can. It is the one dependable drive pulley for tractors—and for all belt-driven machines.

See that the tractor and each belt-driven machine you buy is equipped with Rockwood, *The Drive Pulley*. Don't buy a machine without it. Your dealer can also order Rockwood, *The Drive Pulley* for each of your old machines.

THE ROCKWOOD MANUFACTURING COMPANY
1950 English Avenue INDIANAPOLIS, U. S. A.



For Threshing Grain



For Sawing Wood



For Filling Silos



For Baling Hay



For Shredding Fodder

All the Power—All the Time

ROCKWOOD, PULLEY SERVICE



Farm Mechanics in the Colleges

PRACTICALLY all the state agricultural colleges now have courses in agricultural engineering, or Farm Mechanics, as it is generally called. The need of such courses, for under the general term of agricultural engineering are a number of courses, has become greater each year as farmers have been employing more and more power machinery to perform farm operations.

Increase in attendance in this department of the colleges is marked. What the course really covers and how varied are the subjects taught is shown by the following announcement of E. J. McKibben, of the division of Agricultural Engineering of the University of California:

Can theory actually be applied? This question is being answered in the affirmative by the laboratory work of 347 students in the eleven agricultural engineering courses at the branch of the College of Agriculture at Davis, this spring.

Courses are offered in gas engines and tractors, farm machinery, farm buildings, farm mechanics, forging, dairy mechanics and agricultural drawing. In every course special emphasis is placed upon the fundamental principles involved. The student is given just enough practice to teach him clearly the application of these principles and to fix them firmly in his mind. For instance, in the farm mechanics course he is told why he must keep his soldering copper well tinned and use certain fluxes. The element of practice is supplied by allowing him to try, for himself, the effect of a properly tinned copper and different fluxes on a small soldering job.

California agriculture has now reached the point where the farmer who is to succeed should be trained to think in the fundamentals of engineering. Every day brings new situations and new machines, each presenting new agricultural engineering problems. If his mind has been trained to think straight and his hands to work out the ideas resulting from that kind of thinking, he will solve the most difficult problem with success. This is the training aimed at in the agricultural engineering courses.

The first laboratory period in the gas engine and tractor course is a very good example. The spring semester at Davis started at 1 P. M., Tuesday, Jan. 16. In less than half an hour the 24 members of the first laboratory class found themselves assigned to one of the following tasks: dismantling and assembling single and four-cylinder engines; sliding gear transmission; bevel and spur gear differentials; adjusting of connecting rod and main bearings; roller and ball bearings; and the ordering of repair parts.

By actually taking an engine apart, studying it, and putting it together again the student gains a knowledge of its construction which he could get in no other way. He has a first hand opportunity to learn the name and function of each part, a real chance to obtain inside information.

What happens inside the gear case of your car or tractor when you move the shift lever from low to reverse? This

was one of the questions solved by the students privileged to get at the insides of transmission. They also learned why in certain auto stages the gear set makes all that noise when the stage driver shifts it into fourth gear.

Did you ever have one wheel of your tractor or car get into a mud hole and spin round and round while the other stood still? Students who studied differentials learned how and why such an inconvenient thing is permitted to happen. They learned why it is possible to turn a very sharp corner and still have absolutely no slippage of either wheel.

The dark mystery of connecting rod bearings was made plain to those students assigned to the bearing adjusting exercise. Most car and tractor drivers grind their own valves but many would rather meet a black cat on Friday the 13th than touch a connecting rod bearing.

Tractor manufacturers have frequently complained that they have difficulty in rendering prompt service because of the kind of orders for repairs they receive from their customers. With this in mind, certain parts of several machines were tagged. If the student learned nothing else than the efficient use of instruction books and repair part lists, the course would be well worth while. Have you read your instruction book, or did you figure that the manufacturer was ignorant concerning the machine he built?

In carrying out this type of laboratory work it is necessary to have one or more instructors in the laboratory at all times. Instructors make it a part of their duty not only to answer questions but to see that students are following the best methods of approved practice and to keep constantly before students the university idea of "fundamental principles" and "reason why."



DISCRETION should be used in the choice of land for crops.



Goat-Raising Has Become a Profitable Business, the Milk Bringing a High Price on the Theory That It Is Better for Babies.

What's the Matter in Corn Belt?

Per Acre Yield of Corn Greater in New England Than in Middle West, a Condition Which can be Changed

By Dr. W. E. TAYLOR

AS evidence that improved implements have been mainly responsible for our marked prosperity, it is recorded that in 1850, prior to the development of modern implements, 87½ per cent of all the people of the United States were classed as farmers. At that time but 5 bushels of wheat per capita were produced, or about enough to supply our own requirements. Now, with a population of 107,000,000, and less than 30 per cent of our people engaged in farming, we are producing enough to feed all and have a surplus (which amounts to 34 per cent of our entire crop) to sell to other nations of the world. The same remarkable increase in the total production has been made in all other staple crops and in livestock.

Since the ingenuity of man still appears to be active, it is reasonable to assume that, as time goes on, more devices will be invented to increase further the efficiency of the farmer.

While the United States has become supreme in manufacturing, mining and commerce—because of the development of agriculture—and controls the gold supply of the world, we must not forget that other great nations are ambitious—that they have natural resources, and will never cease to contend with us for that which we now possess. We must not forget that agriculture and manufacturing are inter-dependent, and that our future position in the business world will depend upon our ability to meet all competition in manufacturing. This reminds us that the fundamental factor in factory and mine production is the cost of labor, and that it is in keeping with the cost of living. Therefore, in order to maintain the factory (which is the farmer's partner, for it maintains the market for his product),

the farmer's problem is to produce food at a profit to himself and, at the same time, economically enough to permit our factory labor to be competitive with the labor employed in like factories in other countries.

Better Soil, Feeds and Seeds

Thus far—because of improved implements which have increased the efficiency of the farmer, and because of vast areas of reserve virgin land—the task of production has been easy. But now we are confronted with a possible limitation in new inventions in farm equipment and a greatly reduced area of untamed land. Therefore, in order to keep pace with the increase in population and the activities of our competitors, the farmer must direct his attention to increasing the efficiency of three things over which he has control, viz.:

Efficiency of the soil, of livestock feeds and of seeds.

There has been but little increase in the average production of the more important farm crops during the past seventy years. Our soil possesses a potential power equal to the best in the world, but our average yield per acre is far below that of many countries with soils which were originally less fertile, but where production has been increased by the use of fertilizers and thoro methods.

The Way to Bigger Corn Yield

As evidence that our soils—under the proper treatment and management—will produce more per acre than any soils in the Old World, even where the most intensive methods are used, I will cite the state of Iowa, known as the banner crop-producing section of the world—a state where all the land is tillable and very

fertile. Iowa made an average yield from 1917 to 1921, inclusive, of 40.7 bushels of corn per acre. And yet, in that state scores of farmers make a yield year after year of 100 or more bushels per acre. Their success is due to rotation of crops with clover in the rotation, deep plowing, thoro disking, a liberal use of barnyard manure, the application of lime to sweeten the soil if it is sour, pure-bred seed, and correct cultivation to remove weeds and conserve moisture. Those great corn-raisers know that if one or more of the essential plant-food elements is lacking in the soil, it must be supplied in a commercial form, or the yield will be correspondingly lessened. They know that the price they must pay to secure a yield of 100 bushels per acre is strict obedience to every requirement of the corn plant. They know well that the cost of plowing, disking, seeding, planting and cultivating an acre and the interest on the cost of the land and taxes are practically the same whether the yield is 25, 40 or 100 bushels per acre. Therefore, whether prompted by pride, duty or selfish motives, they do the things necessary to give the greatest returns for labor and investment. There is no reason why all of the corn-raisers in Iowa and the entire corn belt should not secure the same results.

States That Point the Way

While Maine, New Hampshire, Vermont, Massachusetts, Connecticut and Pennsylvania are not great corn states, the five-year average—1917 to 1921, inclusive—was 46.4 bushels per acre. If all of the corn farmers in the corn belt would even follow the methods of those eastern farmers, the annual production in the United States would be increased one and a quarter billion bushels, or the same amount of corn now produced could be raised on a correspondingly smaller acreage and at less cost.

The following further indicates our inefficiency as corn-raisers. An acre planted in the usual way contains 3,556 hills. A medium ear of corn weighs 12 ounces. If each hill produced just one 12-ounce ear, the yield would be 38 bushels per acre; 2 ears would make 76 bushels, and 3 ears 114 bushels. The five-year average—1917 to 1921—was 28.1 bushels per acre, which is above the average for the past 25 years. The fault lies either in the seed bed, fertility, seed or cultivation, or all of those important steps. Corn in common with all other annual



Replacing the Lost Fertility Intelligently Is One Method by Which Crop Yields Can Be Increased.

crops, responds to a properly made seed bed—one that is deep, thoroly pulverized and made compact.

Corn and all other crops require a balanced ration. Nitrogen, phosphorus and potash are the three important plant-food elements, and they should be in sufficient quantities and in the proper proportions. One element cannot take the place of another any more than food can displace water.

From Failure to Big Yields

I had 40 acres of black land extremely rich in nitrogen, but containing only a very small amount of potash. The previous owner had tried for years to produce corn but failed. I applied a fertilizer containing 10 per cent potash and 5 per cent phosphoric acid, and promptly was rewarded by receiving 89 bushels per acre. I used good seed, had a very low per cent of barren stalks, and 90 per cent of a perfect stand.

I had the management of a farm which was badly depleted of nitrogen and humus, but contained a good supply of both phosphoric acid and potash. The land was called "worn out," for it had not produced enough for a number of years to pay for plowing and planting. I planted cow peas in the spring; secured a heavy growth, and the 1st of September turned them under. The following year I made 82 bushels of good corn; the succeeding year, 32 bushels of wheat, and the third year, 48 bushels of oats. Clover was sown with the oats, and the fourth year the first crop of clover was cut for hay, and the second growth plowed under. The efficiency of that land was increased, making it very profitable, simply by growing legumes and plowing them under. That land needed humus and nitrogen; just what the legume furnished.

These Promote Fertility

Numberless instances can be given, showing that the efficiency of the soil has



Good Plowing the First Step in Securing a Proper Seed Bed Means Larger Crops.

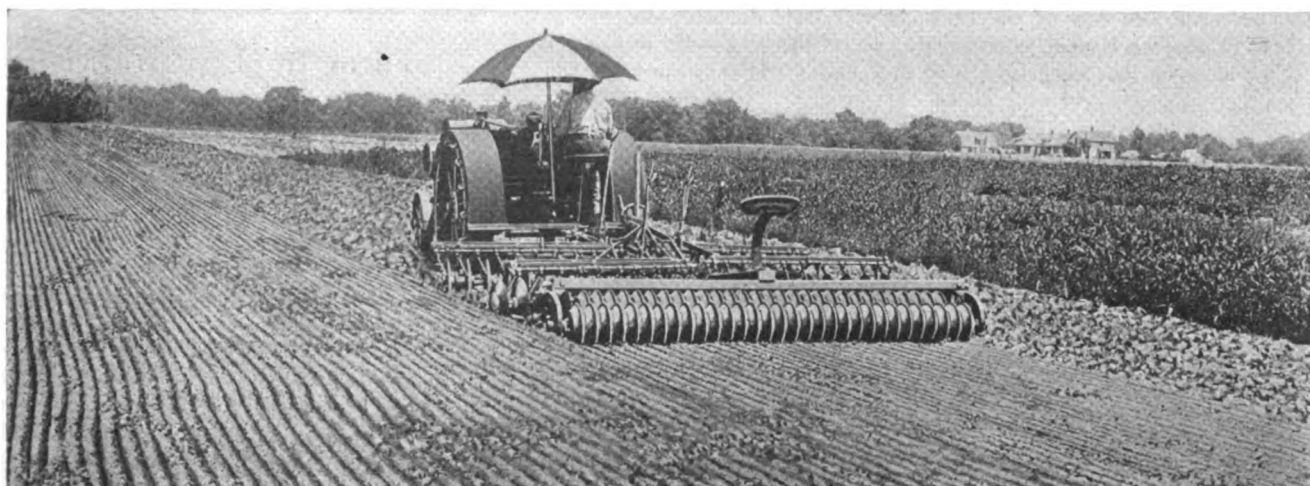
been greatly increased by drainage, by applying lime, by spreading straw, by the proper use of commercial fertilizers, and by using barnyard manure.

Yard manure, straw and green manuring serve a double purpose in that they all furnish humus, and all contain the essential plant-food elements taken from the soil in their growth. While some land is congenitally impoverished—that is, it has been deficient from its creation—most soils were generously supplied before the advent of man with all the necessary plant-food elements in varying quantities, but the Creator did not make the supply everlasting any more than man can make his bank account everlasting without replenishing it from time to time. To guard against exhaustion, great stores were provided from which the farmer can replenish his soil as crops consume the supply. The supply of nitrogen is an

inexhaustible as the atmosphere itself, and, in great caverns of the earth, phosphorus, potash, magnesia and lime are stored in inexhaustible quantities, and it is the farmer's duty as custodian of the land to utilize those substances, not only to maintain, but to increase production as necessity requires.

Profit-Making Livestock Feeds

There is no feature of farming which will admit of greater improvement in efficiency than feeding livestock. The growth of an animal is strictly in keeping with the feed it consumes. A maximum development is secured only when the essential digestible nutrients are given in sufficient quantities and in the right combination. If corn, oats, barley, legumes, cotton seed, linseed, and the by-products of wheat are marketed in a balanced ration thru the dairy cow, beef animal,



Harrowing and Rolling the Plowed Ground, Working It Down and Pulverizing Is Another Farm Operation That Is Profitable.



And Then Comes the Seeding—Proper Adjustment of the Drills so That the Seed Falls Regularly and Is Covered Insures a Yield.

swine, sheep and poultry, the farmer will receive much more than the market price for them. On the other hand, if the value of a balanced ration is disregarded, at least one-half of the feeding value of the feeds is thrown away.

We should not forget that the laws governing animal growth are very exacting. Haphazard feeding is not profitable, but, on the contrary, is very wasteful. Protein and carbohydrates are both indispensable, but their maximum efficiency can be obtained only when they are fed in the right ratio. A ration containing one part protein and four parts or less of carbohydrates would be a narrow or unbalanced ration, and one containing one part protein and seven or more parts of carbohydrates, would be a wide or unbalanced ration. A well-balanced ration is one containing 1 part protein and 5 to 6½ parts of carbohydrates. If the animal is young and growth is desired, then give a ration of 1 to 5, but if the animal is being fattened, give a 1 to 6 or 1 to 6½ ration.

Pointers on Seed Selection

The part good seed plays in promoting efficiency in crop production can be appreciated only when a thoro field demonstration is made. A few of the cardinal things to observe in seed selection are:

Sow no grain that has been heated in

the stack or bin, sprouted in the shock, or blighted because of rust, chinch bugs, or from any other cause. While a percentage of such seeds will germinate, the roots of those that do will be small and weak, and the leaf under-sized and anemic. The farmer should keep in mind the fact that it costs just as much to plow, disk and harrow for poor seed as for good; hence, he cannot afford to make a mistake by planting inferior seed. If he will take the pains to select a fertile piece of ground for a seed plot, and give special care to harvesting the grain and caring for it afterward to prevent deterioration, and will subsequently grade it several times, he will be amply rewarded for all the expense and trouble. Or, if he will select the best patches in the field for seed, he will be repaid. It must be remembered that scrubby seed produces its own kind, just as a scrub animal transmits its deficiencies.

Seed should be of a variety and strain adapted to the locality where it is to be planted. Seed should possess a strong vitality for the reason that the first stem and the holding roots secure their nourishment from the seed itself, none being taken from the soil until the leaf is sufficiently developed to absorb carbon dioxide from the atmosphere.

If the seed is shriveled or has a weak vitality from any cause, the initial growth

will be weak and the leaf will be anemic; but if, on the contrary, it is strong, plump and healthy, it will germinate quickly, and before its vitality is exhausted, the leaf will be breathing in that element which composes the major portion of the plant, namely, carbon.



Add Acid Phosphate to Manure

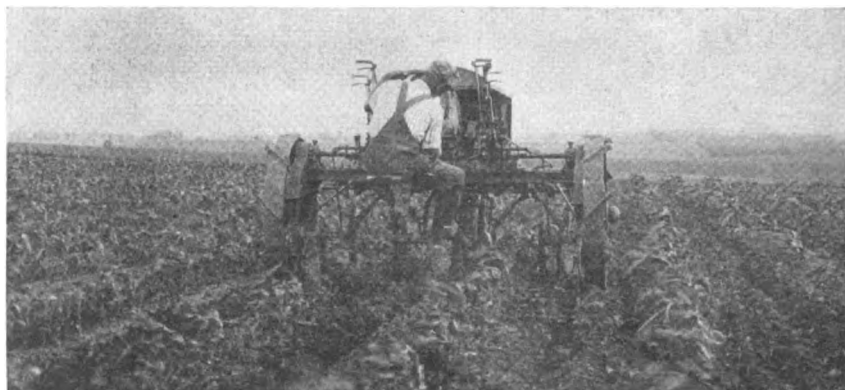
TESTS which have been running at the Ohio Experiment Station for over 20 years show that substantial profits follow the reinforcement of stable manure with acid phosphate before application in the field.

According to Director C. G. Williams, 320 pounds of acid phosphate added to eight tons of manure, and applied to corn in a corn-wheat-clover rotation has produced increases, over the yields from manure alone, at the rate of \$109 per ton of acid phosphate. While all land cannot reasonably be expected to yield the same rate of return, there is no question, according to Director Williams, but that the practice is a very profitable one. He suggests scattering a pound or a pound and a half per animal daily in the stall or manure gutter.



Farm Implement Exports Increase

EXPORTS of implements in the last month of 1922 showed a large increase, not only over the exports for the preceding month, but over those for the corresponding month of 1921, according to an analysis by the Agricultural Implement Division of the Department of Commerce. The figures for these months are: December, 1922, \$2,936,998; November, 1922, \$1,580,351; and December, 1921, \$707,349. It is encouraging to note that, while the exports in December, 1921, were the lowest for any month during that year, those for December, 1922, were the highest for the latter year with the exception of the exports for August.

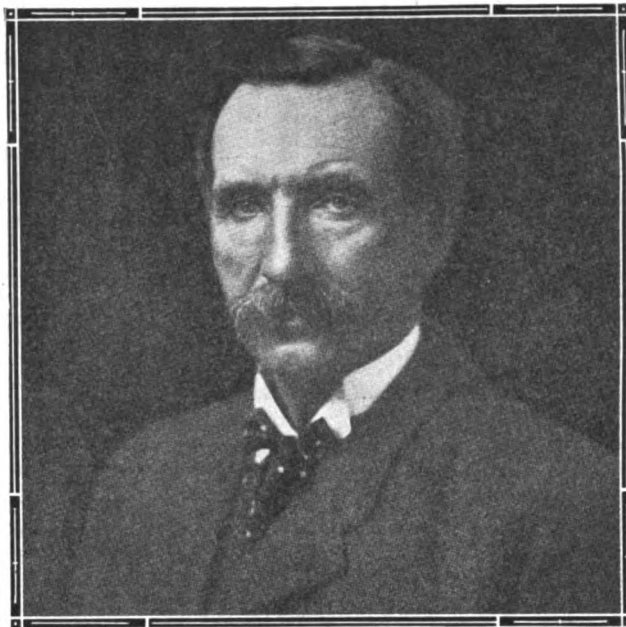


Frequent and Thoro Cultivation Pays Big Dividends When Harvest Time Comes.

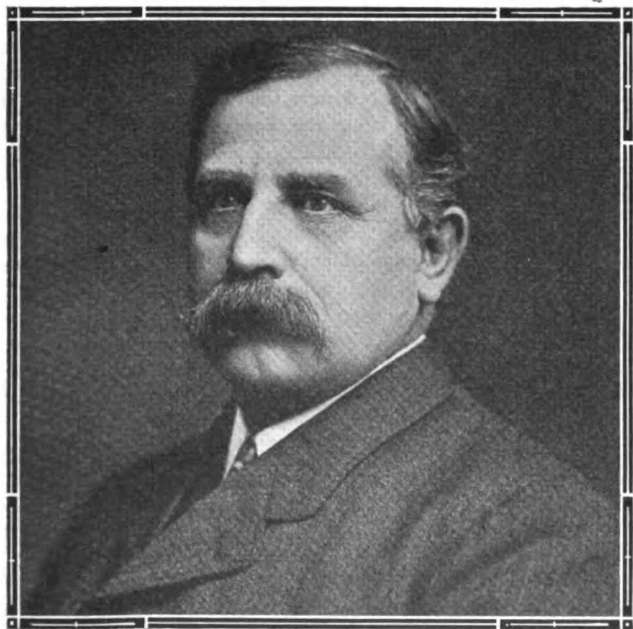
Who Did Most for Farmers ?



J. H. SKINNER, at present Dean of the School of Agriculture, Purdue University, Lafayette, Ind., grew up on a farm. After completing high school he entered Purdue University, graduating in 1897. He went back to the farm for a period of three years and then returned to Purdue as an Agronomist and Assistant in Animal Husbandry. He was made an associate in Animal Husbandry in 1903 and Dean of the School of Agriculture in 1907. Dean Skinner has been responsible for, or at least, a large factor in progress of the School of Agriculture. From a very small number of students in agriculture in 1902 the enrollment has increased until during the last few years there has been a graduating class of one hundred or more. The college farm has increased from 100 to 600 acres. The work with livestock at Purdue has won world fame. Four times a Purdue steer has been grand champion at the International Live Stock Show and many other blue ribbons have been won on all classes of livestock.



PROBABLY no single man did more for the dairy industry, especially in Wisconsin and the Middle West, than **WILLIAM D. HOARD**, editor of Hoard's Dairymen and former Governor of Wisconsin. Governor Hoard, a native of New York State, removed to Wisconsin in 1867. It was not, however, until 1885 that he launched the dairy paper. He was the founder of the Wisconsin State Dairymen's Association and was its secretary for many years. In 1888 he was elected governor of the state and in this position secured the enactment of the law that created a dairy and food commission. One of his notable achievements was the securing of a low freight rate on Wisconsin cheese and butter to the Atlantic ports, a concession that continued for approximately thirty-five years, and made possible the great growth of dairy industry of his state. Governor Hoard died at Fort Atkinson, Wis., November 23, 1918.



FRANKLIN B. NIESZ, who before his death in 1919 was president of the Bucher & Gibbs Plow Co., Canton, Ohio, was the inventor of the flexible disc harrow. Mr. Niesz was born on a farm near Canton in 1854. After graduating from Purdue University, he taught school for a number of years and then entered the employ of the Bucher & Gibbs Co. as a shipping clerk, gradually gaining promotion until he became first treasurer and then president of the concern. His greatest bequest to farmers, however, was the flexible harrow, which is manufactured by a great many implement concerns under licenses from the owners of the patents. This type of harrow has come into general use thruout the country, and is especially adapted to orchard and vineyard cultivation.



CHARLES F. KETTERING is perhaps most widely known for the invention and development of Delco lighting, starting and ignition equipment, which first relieved the motorist of the job of hand-cranking the automobile and added tremendously to the comfort, safety and pleasure of motoring. Growing equally important is the farm electric plant idea, popularized so tremendously with the development of another Kettering invention, Delco-Light, an electric plant which brings city conveniences to the farm. Now, as vice-president of the General Motors Corporation and head of the General Motors Research Laboratories at Dayton, Ohio, Mr. Kettering is directing many lines of valuable research in the fields of automobile development, aviation, motor fuels, household refrigeration and others looking to the improvement of conditions for mankind generally.



Lubrication of Farm Equipment

Proper Lubrication The Life of your Machinery

By D. H. BEISEL

THE efficient operation of all kinds of farm machinery in the highly developed state we find it on the farm today is to a great extent dependent on correct lubrication. This is true not only of farm machinery, but also of our great power plants, our trucks, automobiles, etc. Generally too little attention is given lubrication, which is due to the fact that the average operator or driver does not realize its value and the necessity of the correct oil. The operator generally thinks that oil of any kind just so it is oil is sufficient, and all that is necessary is to squirt a little oil on the bearing or parts to be lubricated periodically. Lubricating oil applied in this manner has but little value. After the oil is squirted on, the bearing for a few minutes is over lubricated, and a lot of the excess oil runs off or is thrown off and wasted. The bearing, therefore, runs almost dry or with very little lubricant until the operator gives it another "dose." This haphazard system many times causes one of the high speed bearings of the mower, binder, or engine to burn

Proper lubrication of Farm Machinery is most important. Many owners do not know what is best to use on different parts of their machines under different conditions. Readers of FARM MECHANICS are invited to put their problems of lubrication up to the "Lubrication Editor" of FARM MECHANICS. All questions will be answered free of charge—EDITOR.

out and at usually the most critical time, just when the rest of the grain should be cut, causing a costly delay. Everything must be shut down or stopped till the proper repairs can be made. Furthermore, serious accidents sometimes result from the seizure or burning out of a bearing. This trouble can be easily overcome by realizing the importance of having the moving surfaces properly lubricated. This is absolutely essential in the operation of the farm tractor, a highly developed unit power plant. The parts revolve at high speeds, have small clearance and support considerable pressure per square inch of bearing surface. If these surfaces are not lubricated trouble will result at once.

The operator should study the machinery and understand its operation, and also should have a knowledge of the principle of lubrication and the right application of the correct oil at the proper time.

Let us consider first the reason for lubrication. In most all farm machines all bearings or parts to be lubricated are generally of the conventional sleeve type. In other words, the bearing consists of two parts, the stationary part and rotating or moving part. The rotating part is called the journal or axle and the stationary part the bearing, inasmuch as it bears up or supports the axle or journal. (See figure 1.) This bearing is usually lined with babbitt metal. However, sometimes bearings are made of bronze or cast iron, which metals are harder and are used where the service is more severe and pressures are greater. Babbitt metal is used, because if the bearing surface is of a softer metal than the rotating part there will be a friction and the surface, even tho softer, will not wear so rapidly. Furthermore, when the babbitt is worn down it can be renewed with a new liner, thereby practically restoring the bearing to its original fit when new. The function which the lubricating oil performs is keeping the rotating parts separated from the bearing surface. If the end of the bearing should be viewed under a microscope it would appear very jagged and rough, similar to the teeth of a saw, as shown in Figure 1. Regardless of the care which is taken in the machining of a bearing or a journal, this roughness cannot be eliminated. If these two rough surfaces rub together these irregularities interlock, causing friction and heat. It can readily be seen that to keep the bearing from being worn down very rapidly and eliminate the friction, it is necessary to interpose between the rotating part and the bearing surface a film of oil. This is exactly what is accomplished when oil is applied to the bearing. The revolving action of the journal draws the oil in between it and the bearing surface, which action spreads it out into a fluid film. The oil is slippery and allows the journal to turn with very little friction.

If this oil film is not kept continu-

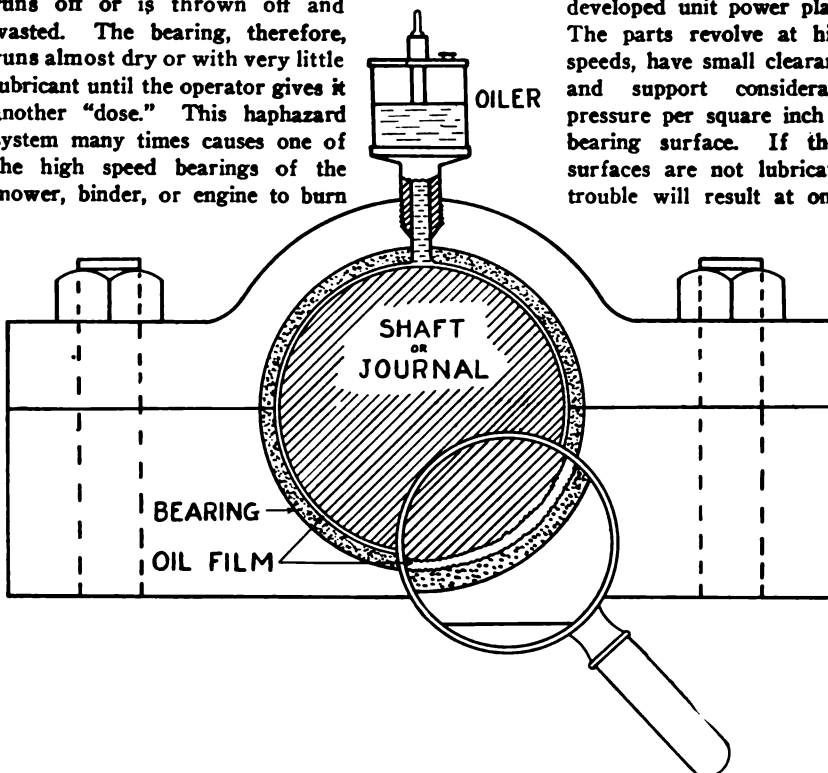


Fig. 1. This Shows How a Bearing Would Appear if the End Were Viewed Under a Microscope. Note the rough surface of both bearing and journal and how important it is that they be kept apart by a film of oil.

ously the revolving journal comes in direct contact with the bearing surface. Whenever this happens great friction develops, due to the rough surfaces rubbing together. This friction produces heat which, if great enough, melts the babbitt metal. The bearing is ruined, as the melted babbitt will flow out like a liquid. When this happens the liner must be removed and the bearing rebabbitted. If the bearing is of cast iron or bronze, seizure will take place, which is generally termed "burning out" a bearing. This necessitates the entire casting being replaced.

There are four conditions upon which depend the selection of the correct oil. These are the speed of the shaft, the pressure exerted on it, the temperature it is subjected to and the clearance.

The speed of the shaft or moving body is important in that at low speeds the friction is much greater than at high speeds. This point can be best illustrated by comparing it to a team of horses drawing a loaded wagon. To start the wagon and draw it slowly the horses have to lean forward and pull hard. As soon as they are at a brisk walk the wagon is pulled much easier, the horses handling it with comparative ease. Therefore, when the speed is slow the resistance is great and a heavy oil is required to keep the shaft supported. At high speeds, however, a light oil is best, as it is much easier to maintain the oil in between the shaft and bearing.

Upon the weight of the moving bodies depends the ability of the oil to hold its place in the bearing. If this weight is greater than the given oil film is able to sustain, the oil is squeezed out. Therefore, the greater the weight the heavier the oil.

The temperature of the moving parts is of importance because, like molasses, when the temperature rises the oil gets thin. It is possible that an oil heavy enough at low temperatures would be squeezed out at high temperature because it becomes thinner. To handle this condition an oil must be selected that will have the proper body at the operating temperature. The higher the temperature the heavier the oil and the lower the temperature the lighter the oil is the general basis.

The larger the clearance, or in other words, the greater space between the shaft and the bearing the heavier oil required. In the case of wagon axles the clearance is large and grease must be put on, while in the case of the high speed bearing of the emery wheel the clearance is small and a light oil is necessary.

For instance, let us consider the lubrication of a cream separator. It has a very high speed shaft, is of light weight and operates at ordinary temperatures. These conditions would call for a fairly



Proper Lubrication Insures Longer Life for the Tractor and Less Trouble for the Owner.

light bodied oil which will flow readily. However, in direct contrast, consider the bearings of the mower wheels which run slowly and support great weight. These require a grease of rather heavy body which will not run off during the warm weather, yet will support the excessive weight exerted on the axle.

It can readily be noted that for each type of machine such as the cream separator, gasoline engine, mower, tractor, etc., a different oil should be used due to the different conditions present in each.

This point cannot be stressed too much if the machinery is to be kept in good condition. You wouldn't wear a straw hat in the winter time, or put long trousers on a four-year-old child. Why then should you put axle grease in the crank case of your tractor engine or a light sewing machine oil in the pitman on your mower? There is a correct oil for each machine—one that will give you best results—use it.

The third important general principle of lubrication is the application of the lubricant. It is not so much the amount as it is the regular application of the oil that will keep the moving parts lubricated. If the proper oil is chosen, based on the operating conditions as are outlined above and is applied in a regular manner no trouble will result. Grease cups, if they are used, should be filled and turned down till the grease can just be seen at the edge of the bearing. They should be given a turn or half turn at definite intervals depending on the rotating speed and prevailing conditions. If these cups are not turned down often enough the bearing will naturally run dry, and no lubrication will be obtained.

Sight feed oilers must be watched to see that the oil is dropping regularly, and that it has not become clogged by

any foreign matter such as dust and dirt. The mechanical lubricator which is used with the steam tractor and some gasoline tractors and which is operated by some moving part of the engine should be inspected to see that ratchet motion has not become impaired; that the oil is being fed; and that the lubricator has sufficient oil. The oil leads should be examined to see that there is no leak and that they have not become bent shutting off the supply.

The lubricating of machinery should be put on the same basis as anything else—it should be systematized and the system followed. You would not harness up a team of horses and take them out for a day's work without first currying them off. You should not start any machinery without first seeing that every moving part has plenty of oil. This, however, is not enough, you must reoil it at regular intervals as the oil is consumed. When this practice is once started, it automatically becomes a habit which saves time and money. First, use the correct oil; second, apply it regularly.



THE potato grower who gives thought to labor, seed and fertilizer is tackling the potato problem in the right way.



SOME farmers fall for stock in an alleged "fertilizer company," yet they can't be persuaded to make an investment in limestone and acid phosphate which would be sure to pay them good dividends.

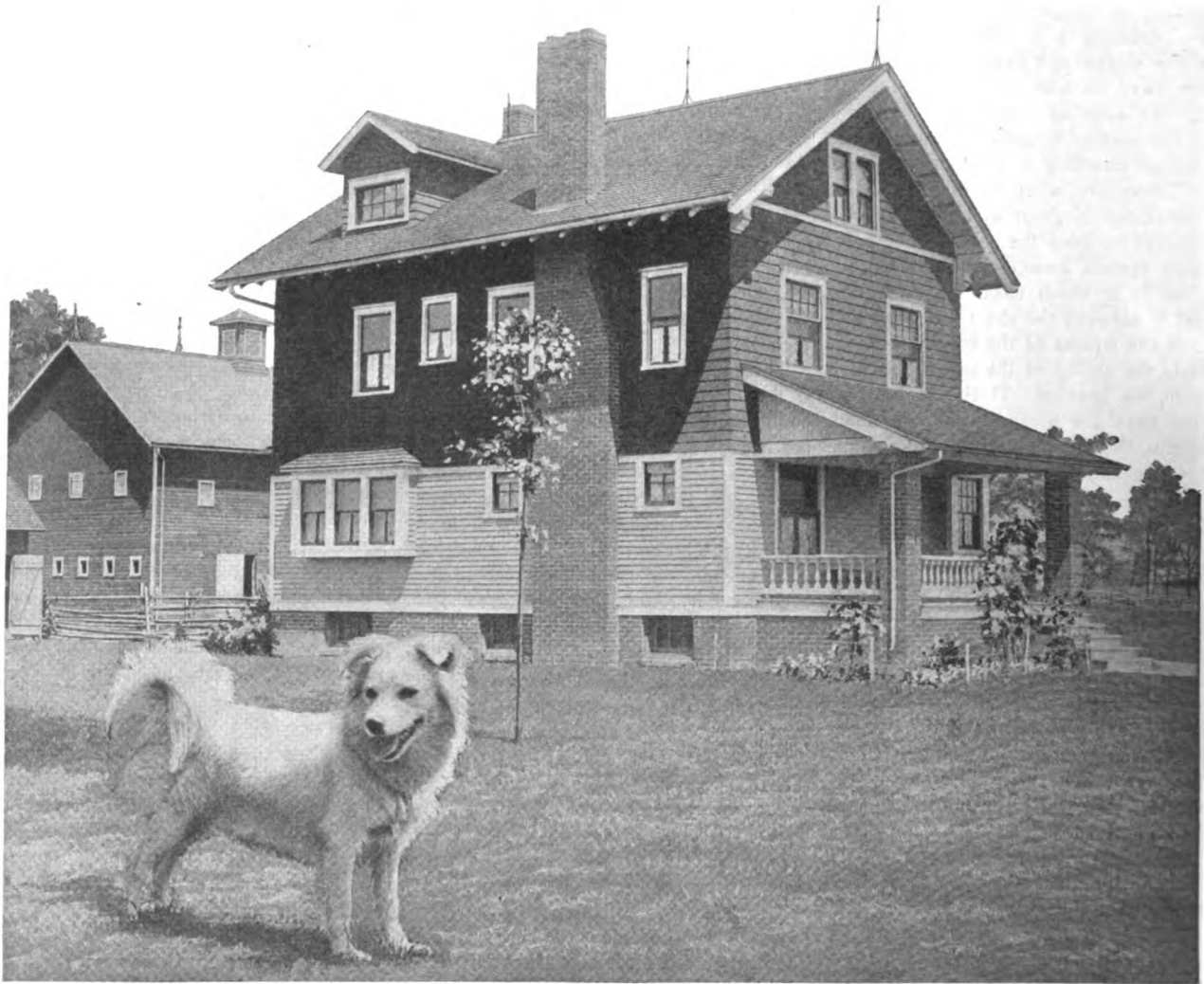
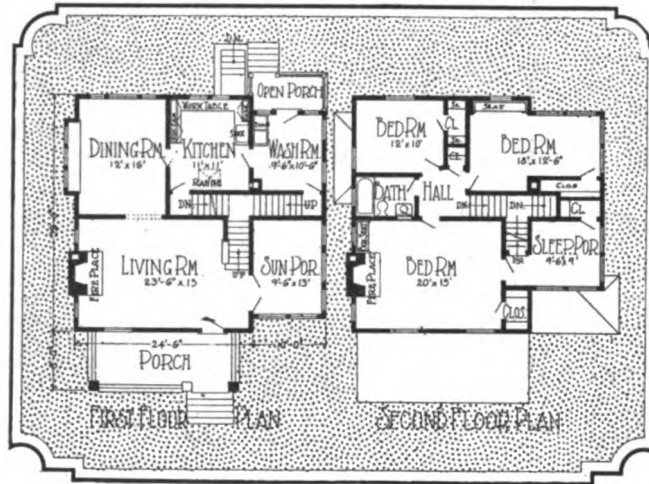


EVER try using the ice cream freezer for a small hurry-up churning of butter?



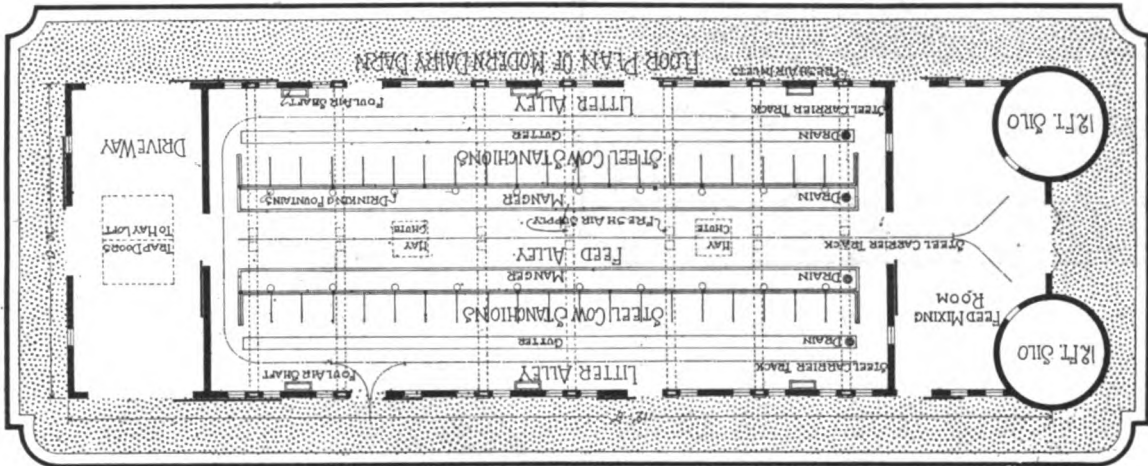
LEMON juice will give flavor to cooked sweet apples, quinces, and other fruits that lack tartness.

FARM MECHANICS BUILDING DESIGNS



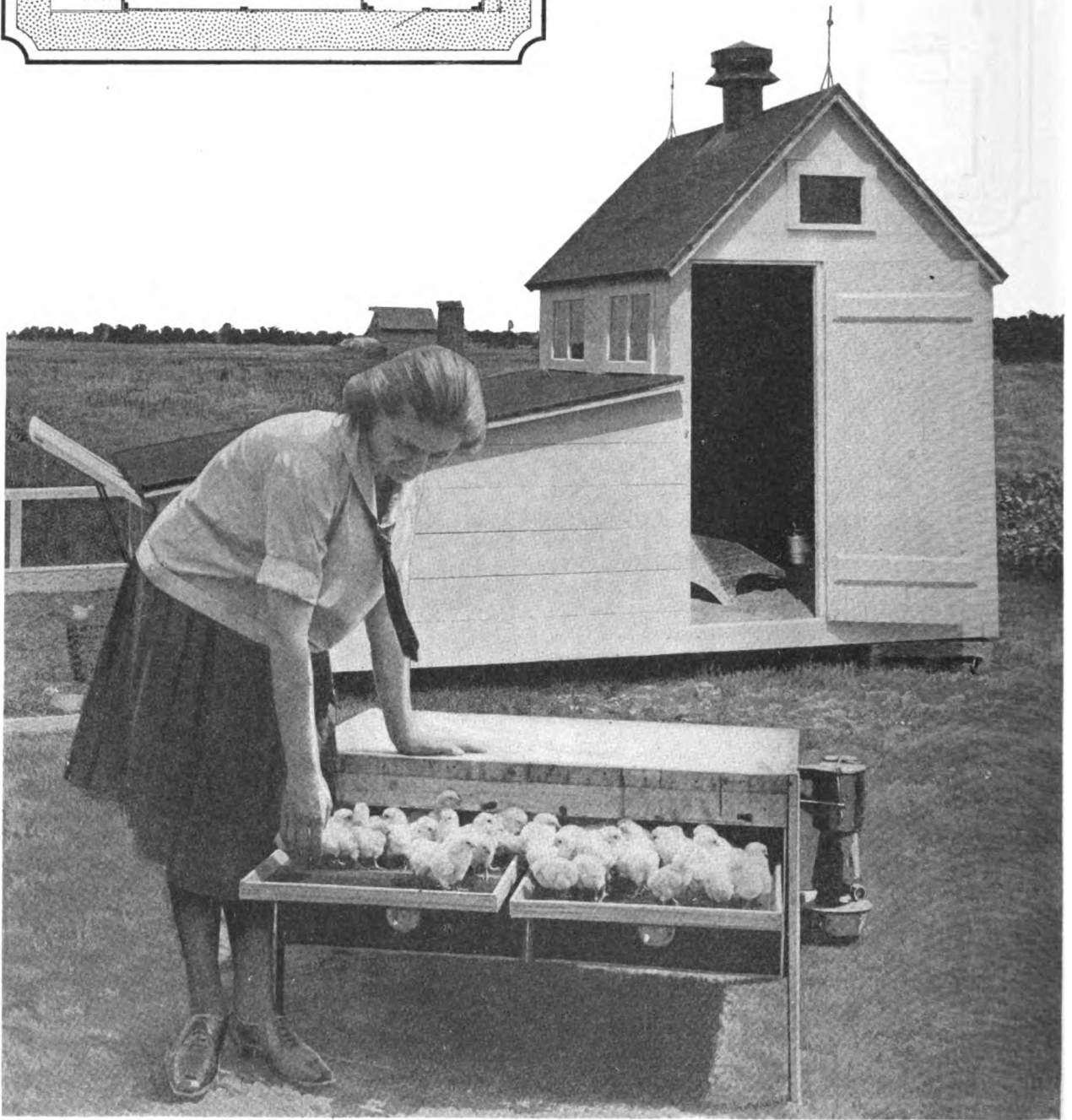
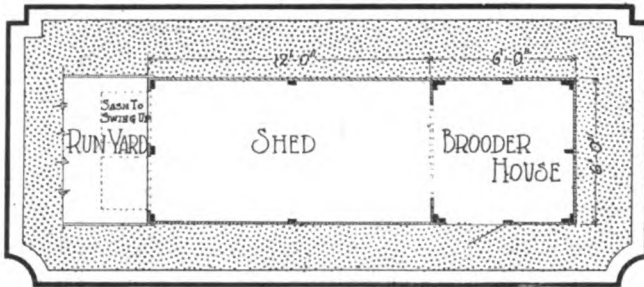
SMALL, MODERN FARM HOME. Six rooms and bath, a sun parlor and a sleeping porch are included in this modern farm home. The building is of frame set on a brick foundation. The porch and the exposed rafters of the roof are features of the exterior appearance. Inside there are a large living room, a dining room, kitchen and wash room, while on the second floor are three bed-

rooms and the bathroom. The extension on the right side of the home provides for a good-sized sun parlor on the first floor and sleeping porch overhead. How the rooms are arranged and their sizes are shown on the floor plans which accompany the exterior view. This is an unusual farm home design and one which will appeal to the prospective builder who wants a compact, modern home.



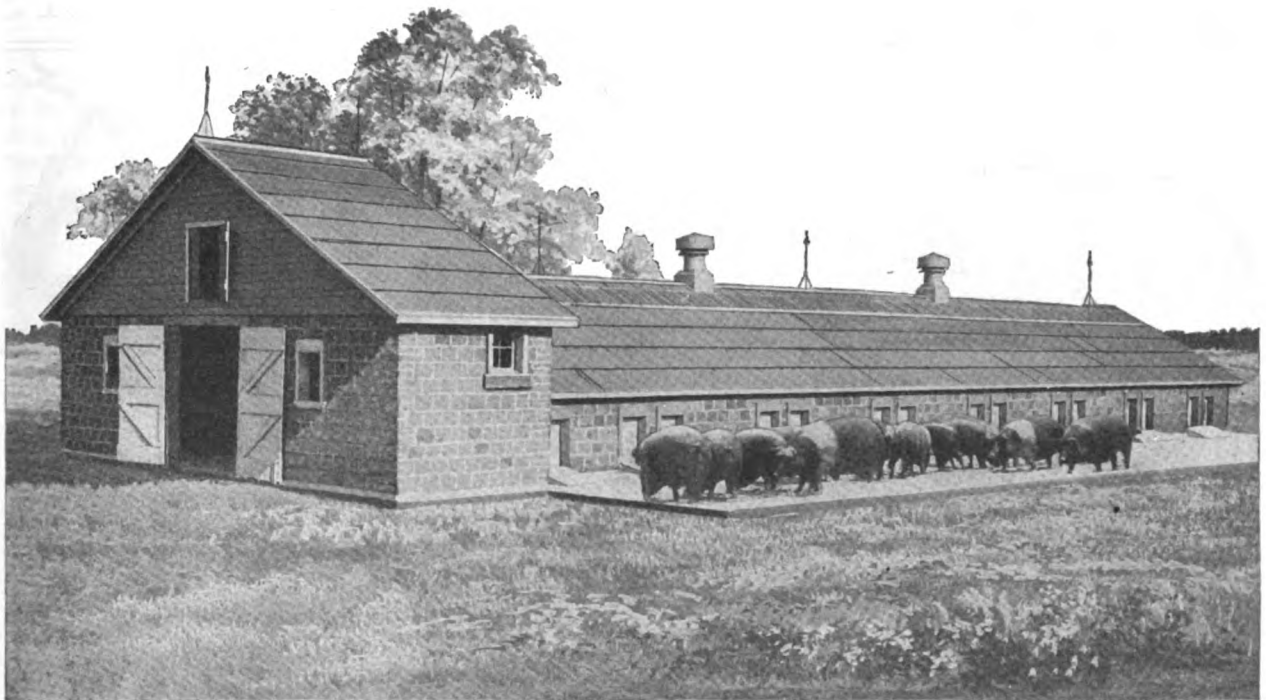
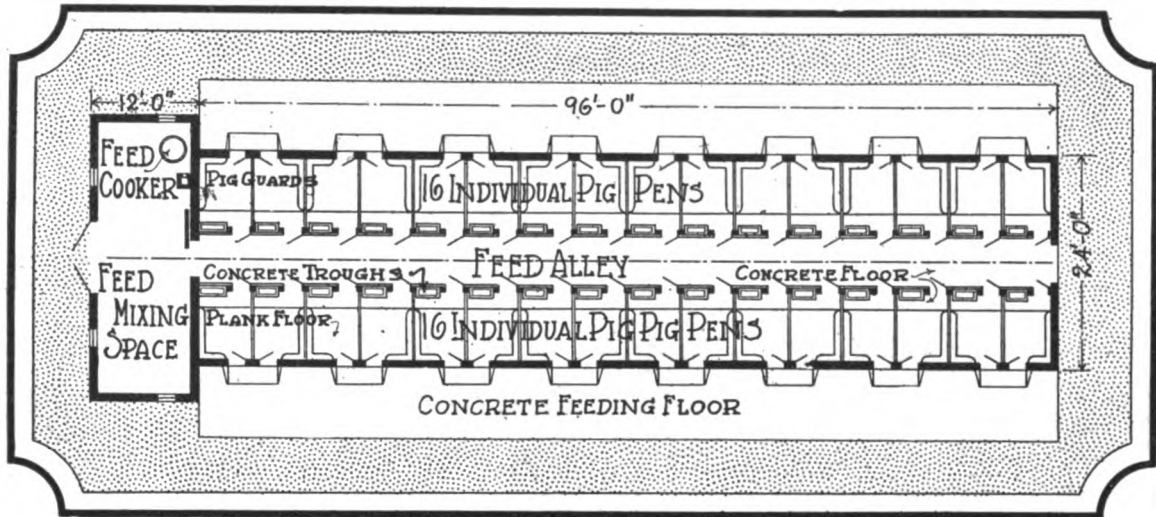
GAMBREL-ROOF DAIRY BARN. Here is an extraordinary good looking dairy barn of the gambrel-roof type. It is 112 feet long and 36 feet wide and will house 40 cows. The foundation walls are of concrete with standard plank frame construction above. The feed alley running thru the center of the building connects with a good size feed room at the end, with two 12-foot silos on either

side. An unusual feature is the driveway at the end running cross-ways of the building. The stable floor is completely equipped with steel stanchions, drinking cups for the cows and an overhead carrier track, for convenience in feeding and for removing litter. A system of ventilation, connected with the suction ventilators on the roof keep the air in the stable clean and healthful.



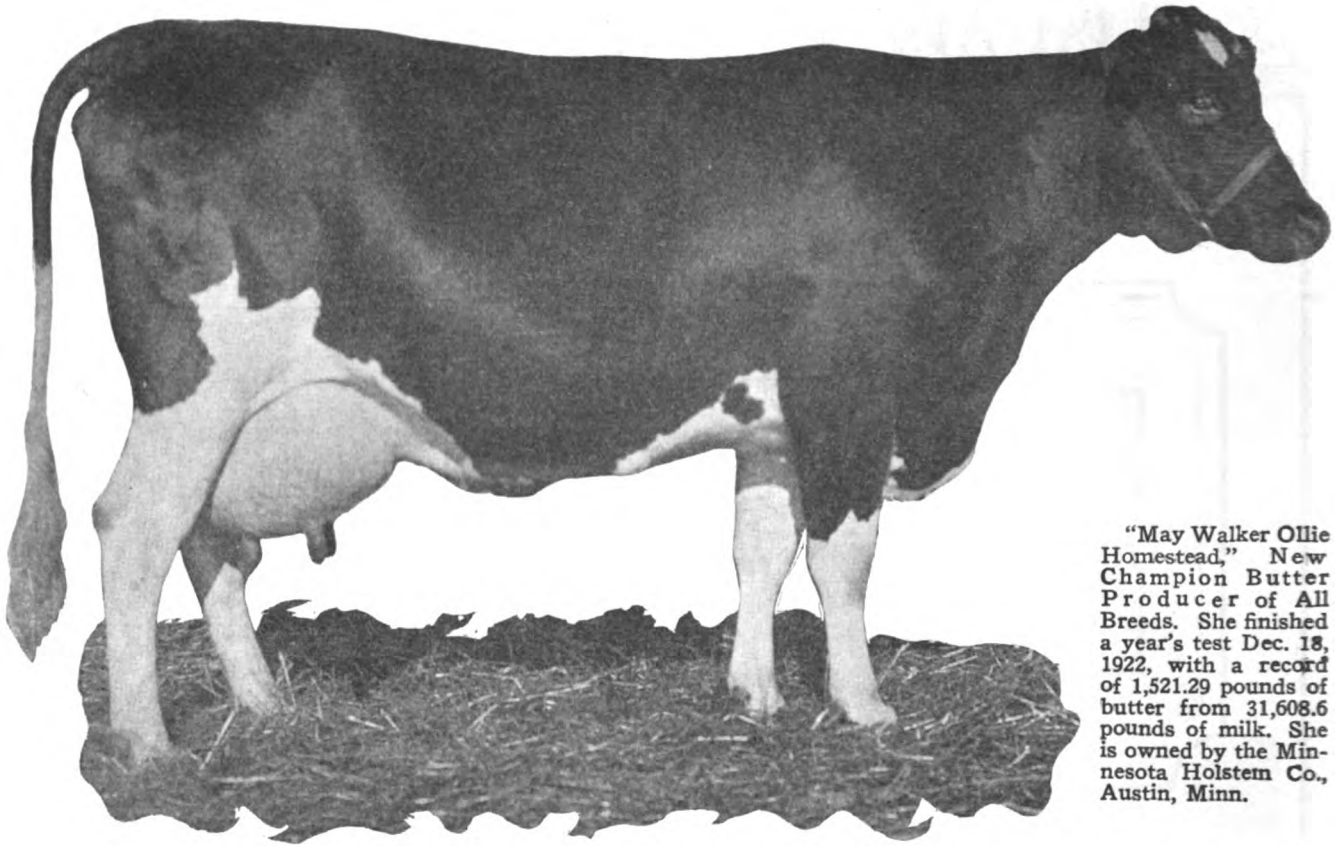
BROODER HOUSE FOR YOUNG CHICKS. Proper housing and warmth for the newly hatched chicks are essentials to profitable poultry production. The house shown here is unusual. The gable roof portion is six feet square with headroom sufficient to permit the attendant to care for the brooder and brooder stove. A low shed portion gives the chicks a chance to run and get away from

the brooder when they are too warm. Connected with the shed part is a run. This house is small enough to be mounted on skids so it can be readily moved when necessary. Such a house as this has been found most efficient in promoting the early growth of young chicks and keeping them healthy.



HOLLOW CLAY TILE COLONY FARROWING HOUSE. The air spaces in the hollow clay building tile used in the construction of the farrowing house shown above aid in keeping the interior warm in winter and cool in summer. The farrowing house proper contains 32 individual pens, all facing on a feed alley that runs thru the center of the building and connects with the feed room at the end. Here there is space for the storage of a con-

siderable quantity of feed as well as a feed cooker, which most hog raisers consider essential to provide the right sort of feed for the sows while they are nursing their young pigs. The building has ventilating system and a concrete floor, over which there are plank floors in the pens. Outside a concrete feeding floor is connected with the house by small doors at the floor line. The building is 24 feet wide and 96 feet long.



"May Walker Ollie Homestead," New Champion Butter Producer of All Breeds. She finished a year's test Dec. 18, 1922, with a record of 1,521.29 pounds of butter from 31,608.6 pounds of milk. She is owned by the Minnesota Holstem Co., Austin, Minn.

Two Champion Butter Producers



"Darling's Jolly Lassie," Jersey Champion Butter Producer. She finished a year on test Feb. 17, 1923, with a record of 1,369.54 pounds of butter from 16,425 pounds of milk. She is owned by Pickard Bros., Marion, Ore.

Fanny Wanted to Sell— John Didn't

Buyers Were Scarce Until Modern Improvements Were Installed at Edwards Place
and Then—Well, Read the Story

By F. J. ST. JOHN

FOR three generations the Edwards farm had stayed in the family name. "Ever since 1824," John Edwards, the present owner, was wont to boast, "there has been an Edwards owning the farm and I hope there will be for many a year to come."

Of late, tho, John was not boasting. That is, not after Fanny Edwards, his wife, got the notion that they ought to sell the farm and move to town.

It seemed reasonable enough, from her viewpoint. Here they were, growing old, with two children, young Molly, sixteen years old and well into the consolidated township high school, and Bruce, a year or so younger.

"The children need the advantage of city life and city schools," was her argument. "What will they know about modern life stuck away out here on an old farm? This house is old-fashioned and uncomfortable, the neighborhood is old-fashioned, the world is moving along and we're sitting back here, not knowing what's going on, and not even concerned because we don't know."

Then John would allow that somebody had to live on the farm and keep them going and, for his part, he was perfectly willing the Edwards should be among the number, like they had been for so many years.

"The Edwards have done enough," would be Fanny's rejoinder, "and now they owe it to themselves to sell out and move into town where they can see a little of what's going on and be a part of another circle than one made up of farmers."

It took much coaxing and argument on Fanny's part before John would even

put a price on the old place. When he did, Fanny declared it was so high that no sane man would pay it. Whereat John grinned and hoped she was right.

"Don't ye put the price down!" old Simeon Foss would exhort John bitterly. "Don't ye sell it! I sold, and now look at me."



John Was Happy Living on the Old Farm.

Then John would look at Simeon. This neighbor had sold out and moved to town some years before against his will and upon the insistence of his own wife, and he had never ceased to bewail his fate.

Mrs. Foss, it happened, unfortunately had some peculiar ideas as to the way Simeon should dress after he became a

city man and, being a woman of considerable force of character, she had succeeded in having him wonderfully and gloriously arrayed. True, he balked at the stovepipe hat which she insisted should be a part of his regular costume, but his pearl spats and suits with stripes and checks most definitely emphasized, were the bane of poor Simeon's life and a source of much glee to his former acquaintances.

Simeon confessed to John that there were times, especially along in the spring, when he got so hungry for the feel of a pair of old overalls and a blue shirt that fell away comfortably from around his throat, he would have gladly traded off all his showy clothes and his spats for the old overall suit and the right to get out and wear it when he pleased.

"There's nothing to this thing of living in town so far as a farmer is concerned," Simeon would reiterate bitterly. "You keep your price up and hang onto your farm."

Very evidently, tho, the price was too high. Prospective buyers said so, even those who came along in August, when the crops were maturing and things looked their best around the old place. Fanny insisted that the children should enter school that fall in the city she had picked out for their future habitat, a manufacturing center of 200,000 population, 50 miles away.

When John at last agreed to drop the price two dollars per acre, his wife felt the place was as good as sold, and she packed off to the city with the children to get them started and to look the ground over against the time she



Three Generations of the Edwards Family Had Lived on the Old Place and the Idea of Moving to Town Did Not Set Well.



The Edwards Porch Was a Comfortable Spot for Father and Son and the Members of the Family.

and John would be buying their new home there.

That fall things were not very satisfactory, with the family divided. Fanny and the children came home for an occasional week-end and John, meanwhile, with the aid of an elderly couple in the farm tenant house, managed to get along after a fashion.

In the city his family was paying what he and his wife agreed was a ruinous rent for light-housekeeping apartments. Much of their living, so far, they were getting from the farm. Fanny was noting prices of commodi-

ties, however, and found herself often wondering, with a faint stirring of misgiving, just how they would manage the terrific expense of city living when there was no farm to fall back upon. She had never questioned but that the income from John's modest investments and from the proceeds of the sale of the farm would keep them nicely. Now she wondered seriously if the income would not have to be supplemented some way, but she could not think just how.

She would not give up, tho, and she kept in close touch with John and the

matter of prospective purchasers from the farm, and encouraged the homesick children as best she could, to find at least one redeeming feature in the strange city school. She tried to keep expenses down, to forestall any criticism or rising tide of objection from John, about the cost of living in town. She watched the bargain ads, patronized the chain store groceries and walked blocks to save a few pennies here and there. It was her frequent experience that some unexpected demand from one of the children would more than sweep away the pennies she had saved that day thru her careful buying and strict economy. Club dues and expenses for this and that society had to be met, they explained, and they had to pay their share of the money that their crowds frittered away daily in the movies, candy stores and shops around the schools.

When they came back to the city after Christmas she told John, "I don't think we'll be out again until we come to pack up, when you sell the farm. That's got to be pretty soon now, even if you have to drop the price again. We can live cheaper, too, once we are established in our own home, instead of camping the way we are doing."

"Don't you believe you can live cheaper!" old Simeon Foss snorted, when John told him what Fanny had said. "It'll cost ye like smoke to live in the city and like enough you'll have to get a job of some kind, with them two children to keep in school."

"Well," John lamented, "if I do, I do, I suppose. Fanny's set on it. I ain't livin' at all now, tho I don't see what I'm going to do about selling. I can't afford to put the price any lower and nobody'll buy it now."

Old Simeon's eyes twinkled shrewdly. "Do you want to sell it, sure enough?"

John nodded, sadly.

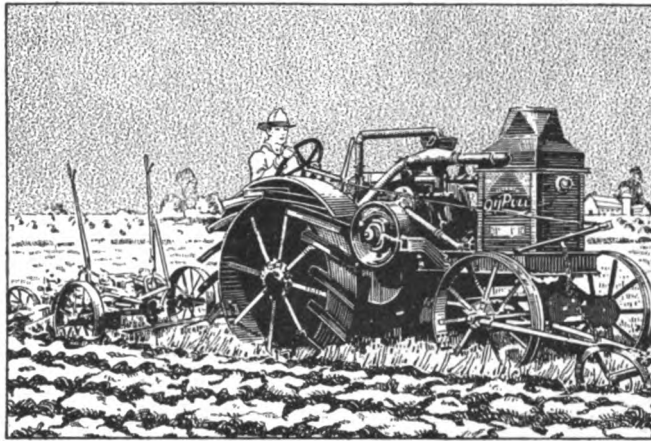
"Then I'll tell you what to do." Old Simeon's voice buzzed away earnestly for fifteen minutes, John nodding understandingly from time to time.

"All right, I'll just do it," he agreed finally. Old Simeon gave him a parting encouraging slap on the shoulder and left him to follow out his plans.

To the onlooker these would have seemed mysterious enough. One of the first things he did was to have some busy-looking workmen come out and start to stringing wires all around the place. Those that they put in the house they concealed cleverly behind the partition. On the walls there were attractive looking metal plates with push buttons connected to these same wires. At another end of the wires there were odd-shaped glass bulbs, nestling in fairly elaborate metal settings. The wires were stretched to the barn, too, also to the



The Electric Light Plant Made Ironing a More Comfortable Job.



From every State come letters praising OilPull Dependability

The big outstanding OilPull trait is dependability. And this is a trait that is desirable in any section and under any conditions. A tractor must be dependable. It must start easily in hot or cold weather. It must keep

going day after day and year after year. Dependability is worth everything at plowing and harvest time. According to thousands of farmers whose letters reach us, the OilPull is absolutely dependable.

OILPULL

"The Cheapest Farm Power"

Thousands of letters come into this office. North, South, East, West—all sections and all farming conditions are represented. They express the American Farmers' verdict on the Oil Pull. Dependability is only one feature they discuss. In all of them are mentioned the wonderful fuel economy, remarkably low repair expense, long life. And these are farmers who know

the OilPull—who use it day after day and year after year. Their recommendation is better than any story we can tell. They prove that OilPull is built right—that Triple Heat Control, dual lubrication and other OilPull features combined with the strict manufacturing principles of the OilPull produce a tractor that makes money for the farmer.

We Have Letters from Your District

Practically every section of the country is represented. Yours is included. You ought to read these letters from your section. They show what the OilPull is doing for your neighbors. We will gladly send them, together with a copy of our new booklet on Triple Heat Control, if you write Dept. AC.

ADVANCE-RUMELY
THRESHER COMPANY, Inc. La Porte, Ind.

The Advance-Rumley Line includes kerosene tractors, steam engines, grain and rice threshers, husker-shredders, alfalfa and clover hullers, and motor trucks.

Serviced from 33 Branches and Warehouses

214D



And an Electric Vacuum Cleaner Took the Hard Work Out of Sweeping.

sheds and poultry house. There were no metal trimmings here, but each wire ended in one of those same glass bulbs.

About this time some other bustling busy men came out and helped John build a foundation of cement about two feet square at the base and shaped like a truncated pyramid. The mystery thickened when one day another man brought out some crates containing a lot of interesting metal equipment. A part of this, a symmetrical metal apparatus about two feet high, they mounted fast onto the cement foundation, bolting it with bolts that had previously been set in the cement foundation top and allowed to harden there. Near by, on two stout shelves about seven feet long, they set two rows of big, clear glass jars, filled with a transparent liquid and each containing a set of lead-colored plates. This set of jars was connected with wires to the equipment on the cement foundation and to the system of wires that had been run thru the buildings.

Another piece of equipment, about as big as the one on the concrete foundation, they fastened down to another base that was formed over the well. Some hollow pipe ran from this equipment, down beneath the surface of the water. Other pipes they ran into the house. One set went to the kitchen and was connected up to a big metal affair that resembled a white china dish set beneath the kitchen window. Another set of these pipes led upstairs to some more big white boats and bowls—all very attractive looking and very mysterious. Still another set led into the basement and connected with some substantial trays that looked very much as tho one so disposed could do a week's wash-

ing in them. The final set of these pipes led out to the barn and ended at a big trough that was manifestly intended to hold a lot of water and meant to be used for watering the stock.

Two pretty important things happened about the time all this equipment was installed in the Edwards place and the finishing touches put on. One was that a stranger came along one day, looked at the place, liked it and agreed to pay John's price, advanced again to his very first figure—that is provided his—the stranger's—wife liked the place as well as he did, John thoughtfully injected a proviso into the agreement himself, at this point. This was, if Fanny agreed to sell.

Well, that was one thing. The other was that John got a letter from Bruce, the boy, stating that someone had snatched his mother's pocketbook from her hand while she was shopping and had left them—well, pretty well broke. They needed some money and they were all, including his mother, so homesick they'd like to come out home once more, for a little visit, even if it wasn't time to pack up and leave the farm for good.

So John sent them the money and they wired him to meet them at the station that evening. They were there, too, you can believe, when the train pulled in, and they were awfully glad to see John Edwards. Fanny sat on the front seat with him during the drive home and snuggled up to him and talked so steadily he hadn't any chance to tell them about the preparations he had made to sell the place nor the offer he had. But when he got them home and into the darkened house, he did push one of the buttons in one of those mys-

terious plates and, wonder of wonders, a bright, white light sprang up in each of a cluster of those glass bulbs in their metal setting, or fixture, in the middle of the living room.

"Electric lights! Oh, Dad!" young Molly shouted, "however did they get here? Are they all over the house?"

They were, sure enough, electric lights all over the house, and on the porches and out at the barn and in the sheds, everywhere around the place.

"And running water in the kitchen," Molly screamed with delight, a moment later.

"And a bathroom up here," Bruce shouted a moment later from upstairs.

"John Wellington Edwards," Fanny demanded, in a half-frightened tone, as she caught her husband's arm and held on to him trembling, "what does this mean?"

"Well, I'll tell you," John explained, willingly, as the children joined them. "You know, the place was hard to sell, so Simon Foss suggested that if I'd put an electric light plant out there in the shed, so I could have electric lights all a round the place, and an electric water system for running water, why, he said I'd be sure to get a buyer for the place."

"Well, I'd think you would," Fanny murmured dazedly.

"Well, I did," John next proclaimed, as vindicating his friend Simeon's judgment, but a little regretfully still.

"What? You've sold it!" Fanny explained, unbelief in her tones.

"Yes, today. All he wanted was for his wife to see it—and she'll be here with him tomorrow. And I told him I'd have to see whether my wife was willing to sell."

"Is the contract made? Did he pay any money down?" Fanny asked slowly.

"No."

Fanny walked to the kitchen, turned on the water in the faucets over that new sink. She snapped a light on and off. She walked to the kitchen door, snapped on a porch light from the switch there, pushed another button and turned on a light away down at the barn. She came back to the hall at the foot of the stairs, pressed a button that turned on a light upstairs in the hall, snapped it off and walked slowly back to her husband, while the children stood waiting, not knowing what would happen next.

"John, what would you say, after all the fuss I've made, if I told you I didn't want to sell—that I wanted to stay right here?"

"I'd say," John swallowed manfully at a big lump in his throat, as he reached out and drew her to him, "I'd say, 'Praise God from Whom all blessings flow!'"

(Continued to page 52)



DO YOU KNOW WHY THE GEAR-SHIFT IS DIFFERENT?

The design of Dodge Brothers gear-shift takes into consideration the natural inclinations of the driver.

To start, you throw the lever forward. To reverse, you pull the lever backward. And when the car is running in high gear—which is about ninety per cent of the time—the lever is in a forward position, out of the way, where it does not interfere with passengers, robes, or luggage.

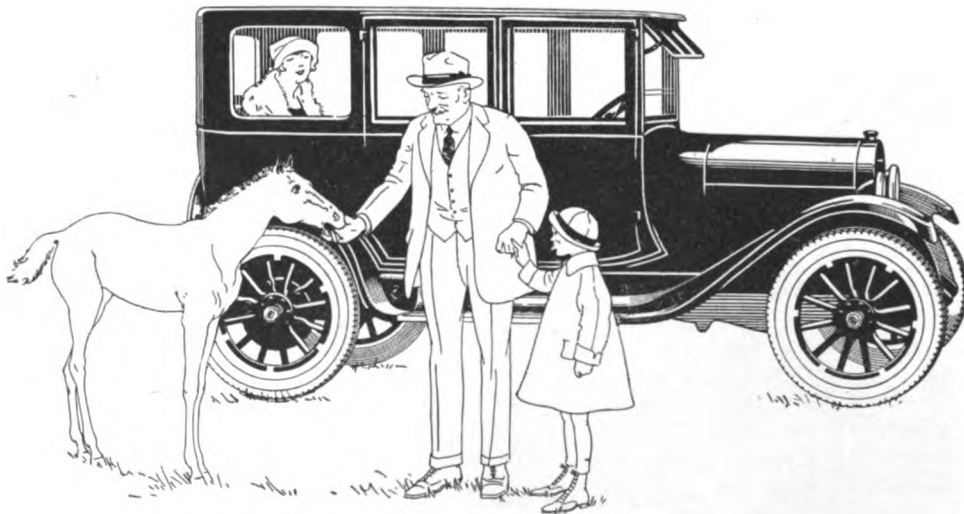
Moreover, the transmission, developed and patented by Dodge Brothers, is so designed that the countershaft—used in intermediate speeds and in reverse—is disconnected when the car is in high. There are no gears in mesh. Power is transmitted directly from clutch to rear axle.

This exclusive feature prevents the loss of power through friction, reduces gear-box noises and eliminates a vast amount of wear.

That is why the gear-shift of Dodge Brothers Motor Car is *different*.

DODGE BROTHERS

The price of the Business Sedan is \$1195 f. o. b. Detroit



Patents Pending



WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

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Letters Home From College

"Kill the Common Barberry and Save the Wheat from Rust," Bill Tells His Father

DEAR DAD: I am proud of you, Dad. I showed your letter to the Dean the other day, and what do you think he told me? "Your father is one of the many thousands of American farmers whose sons are going to bring American agriculture up to the high plane which our natural resources, climate and resourcefulness make possible."

When you stop to think of that remark, your imagination is fired. You can see the millions of acres that make up the farm lands of our country—the wheat sections of the north, the corn belt of the central portion and the cotton industry of the south. And mixed in you can see the great meat producing sections, and the dairy industry. These are made possible by the wide range of our climate. And then take that last word "resourcefulness." No situation has arisen that our farmers and the men who are back of the farmers, the national and state agricultural scientists, have not met it. Add to these the inventors and manufacturers of farm implements. The latter have led the world. No farm implement in use thruout the

THE COMMON BARBERRY BUSH

The Grain Farmer's Worst Enemy.



Destroy it!

Close-Up of Twig and Leaf of the Common Barberry.

world originated in any other country but ours. Do you doubt that such thoughts stir my imagination and make me want to learn more and more so that I can be a better farmer than even you are, Dad? And everyone who knows you realizes that you a mighty good farmer. If you were not, I wouldn't be able to be here at college.

The other day I was reading that Congress last spring appropriated \$350,000 for the work of eliminating black stem rust. The money was appropriated at the request of the Conference for the Prevention of Grain Rust, an organization formed early in the same year by representatives of the agricultural interests of the states of the wheat growing sections, at a meeting held under the leadership of the American Farm Bureau Federation called to discuss the continuation of the ravages of black stem rust.

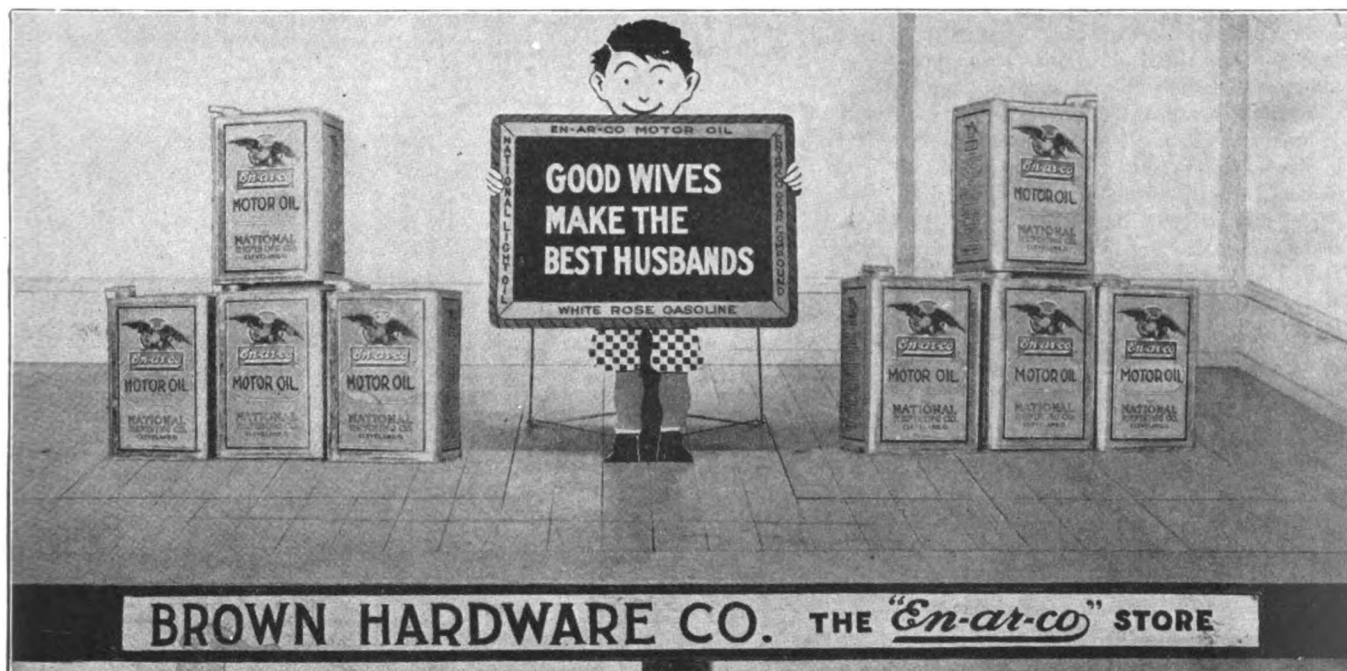
Setting aside of this money shows that such work as the battle against black stem rust is being recognized as something vital to the country. But back of it is a story that I know you will be interested in, because it demonstrates the immense value to farmers of the studies of the agricultural scientists.

Black stem rust is probably as old as grains themselves. Thru the centuries it has been a menace to crops of small grains. It was not until 1660, however, that any attempt to eliminate it is recorded. Then the farmers of Rouen, France, became convinced that in some manner its appearance was related to the presence of what now are called the common barberry bushes. They knew nothing of the disease, but because it infested fields near these bushes, they decided to dig them up and destroy them.

In this country before the Revolutionary war, the same idea prevailed, and the states of Massachusetts, Connecticut and Rhode Island passed laws banishing the common barberry. These people did not know the scientific facts about rust as they are known today. But they saw that grain always was more heavily rusted near barberry bushes. So they used their common sense, and dug them up and burned them, bushes, roots and berries.



A Typical Common Barberry Bush.



—and NOW EN-AR-CO Junior

The Little Brother to EN-AR-CO Senior

The Greatest Window Sign Ever Put Out

You all know En-ar-co Senior—the Big, 6-foot En-ar-co Boy and Slate Sign. Now we want to introduce to you **En-ar-co Junior**—just as striking, original, unusual and novel as his big brother.

Painted in Five Brilliant Colors

En-ar-co Junior stands over 3 feet high, the slate being in proportion, making it suitable for window or counter display.

The five brilliant colors make this sign unusually attractive—a real eye catcher. But the big feature of this sign—the thing which makes people look for it day after day—is the clever sayings—(which are copyrighted),

that you paint on the slate. We supply enough of these sayings, every one different, to last a year—a new one for every other day.

The sign is supported by a wire easel, which makes it easy to display where it will be seen best—to attract attention to your business—to make your place talked about—to bring you trade.

Learn How to Get This Sign

If you now have En-ar-co Senior sign you will want En-ar-co Junior. If you are not an En-ar-co dealer you will want our liberal dealer offer, full particulars about both of these signs and complete information about En-ar-co products.

Write today, stating whether or not you are an En-ar-co dealer.

We make En-ar-co Motor Oil, En-ar-co Gear Compound. While Rose Gasoline and National Light Kerosene, which are the highest types of scientific refining on the market

THE NATIONAL REFINING COMPANY

National Headquarters, 705-D5 National Bldg., Cleveland, O.

4 Modern Refineries

97 Branch Offices

As immigration spread westward, people from their old homes brought reminders of their former surroundings. One of these was the common barberry. It was planted as an ornamental shrub in lawns and about farm homes, the owners being ignorant of what ultimate harm they were doing. The seeds of these bushes, carried by wind and water, spread and more bushes appeared.

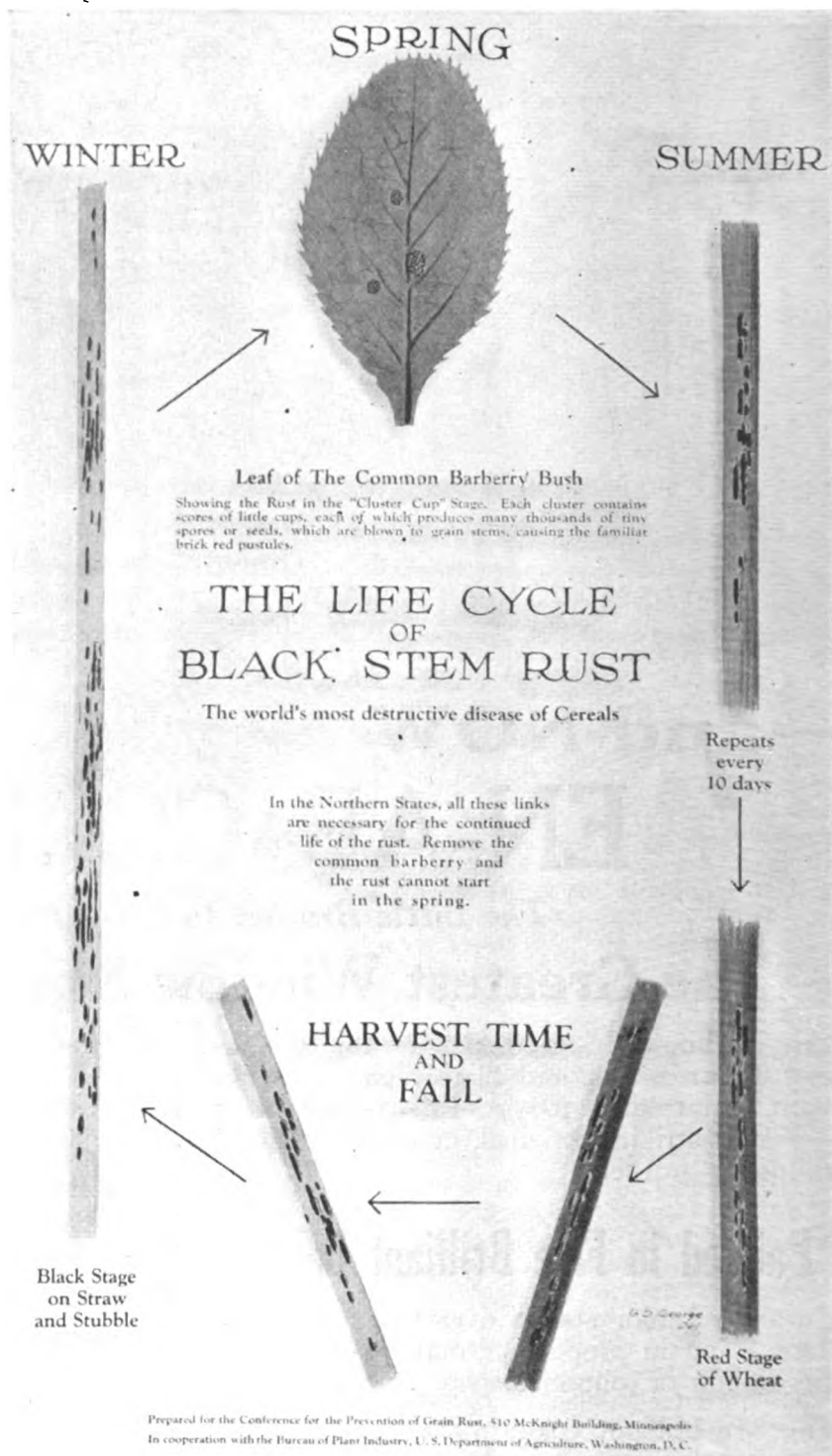
In the meantime scientists were working to discover what the rust was and how to prevent it. And here is what they discovered: Black stem rust is caused by a mold-like parasite which lies dormant on straw and stubble thruout the winter. In the spring it spreads to the common barberry. From the barberry the rust spreads to grasses and grains. It is a fungous parasite. In the spring it grows on the barberry on which it forms rust spores, or seeds. These spores are blown by the wind to grasses and grains. They germinate in moisture furnished by rain or dew and infect the grain. The parasite gets into the stem of the plant, takes its food from the plant and then within a week or two produces the red rust that every grain farmer knows about to his sorrow.

This red rust is the summer stage of the black rust. The red spores are in turn blown by the wind and infect other grain plants. Later in the season the red rust becomes black. This is the winter stage. The winter spores cannot germinate at once but lie dormant until spring. Then they germinate on the common barberry, which is a mother to them until they reach the red stage. By this time the grains and grasses are at a stage to provide food for the parasites.

By destroying the common barberry the black stage of the rust becomes harmless. The rust then cannot get an early start in the spring because it cannot maintain itself in northern states in the red stage thruout the winter.

The discovery of these facts about the life cycle of the parasite started a campaign for the elimination of the common barberry bush. Among the northern wheat growing states North Dakota took the lead. In 1917 it passed a law requiring its destruction. Since then Montana, Colorado, Wyoming, Nebraska, South Dakota, Iowa, Minnesota, Wisconsin, Illinois, Michigan, Ohio and Indiana and the wheat-growing provinces of Canada have followed suit.

The United States Department of Agriculture, in 1918, largely as a war measure, began the destruction of the common barberry bushes. In the states named above more than 5,500,000 barberry bushes were found. Between the beginning of their destruction in April, 1918, and December 31, 1921, 4,443,826 bushes were removed, and during the last year



A Card Prepared for County Agents to Use in the Fight on the Barberry.

owing to the large appropriation the work has been progressing more rapidly.

What black stem rust cost the grain farmers of the eight states in the three years, 1919, 1920 and 1921, is shown by the report of the Bureau of Plant Industry of the U. S. Department of Agriculture. During those three years the loss was 163,264,000 bushel, valued at \$209,166,990. Of this amount wheat farmers were the hardest hit, their losses being 114,500,000 bushels, valued at \$186,554,310.

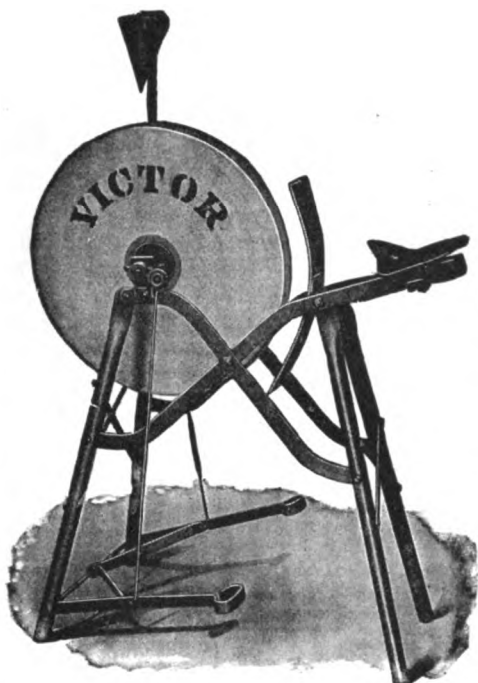
So you see, Dad, that an appropriation

of \$350,000 to eliminate this loss, is but a drop in the bucket, when compared to what the barberry has cost and is costing us farmers.

The barberry is not a native of this country. It was brought in, as an ornamental shrub. It should be kept in mind, however, that the Japanese barberry bush, the low, gracefully spreading shrub that is so common in many lawns is perfectly harmless. This variety can be easily distinguished from the common barberry by its smaller size and the fact

(Continued to page 52)

Less Time and Less Work With an R-W Ball-Bearing Grindstone



Don't "pump" your legs off on an old style grindstone. Get an easy running R-W grindstone and do a better job in half the time.

R-W Ball-Bearing Grindstones have steel frames that are light but strong, and remain rigid no matter how long or how hard you use them. Built on correct mechanical principles—the utmost in power with the least effort. Ball-bearing journals and crank attachment; detachable steel axle; cranks held securely on axle by our patented nut locking device. Adjustable, comfortable seat. Every stone guaranteed to be genuine Berea Grit—the best for general work.

See R-W Grindstones at your local dealer's—try them—test for yourself how the smooth-running R-W takes the "grind" out of grinding. Several models to meet your exact needs.

Save the Old Shovel or Fork With Malleable D's



Wood Handle
No. 282

Many a well-liked, well-balanced old shovel, or spading or manure fork, has had to be thrown aside because of a broken handle. R-W Malleable D's will keep your old favorite at work as well as save you the cost of replacing it.



Side View

R-W Malleable D's have a three-inch strap ferule. Adjustable to any size handle and can be kept tight, even if wood shrinks. No trimming necessary. Held securely by two rivets. Easily removed if desired. Choice of wooden or all malleable handle. Ask your dealer.



All Malleable
No. 382

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R-W Barn Door Hangers

A variety of styles to meet every requirement. Smooth-running, strong, durable. Ask your dealer to show you R-W Barn Door Hangers.



You Should Have This Free Book

Before you do any building, remodeling or "tinkering," write for Booklet P, "Hardware for the Farm and Home." Contains much helpful information.

How the Farmer is Financed

Joint Stock Land Banks, Under Federal Jurisdiction Provide Long Term Loans for the Men Who Have Larger Investments

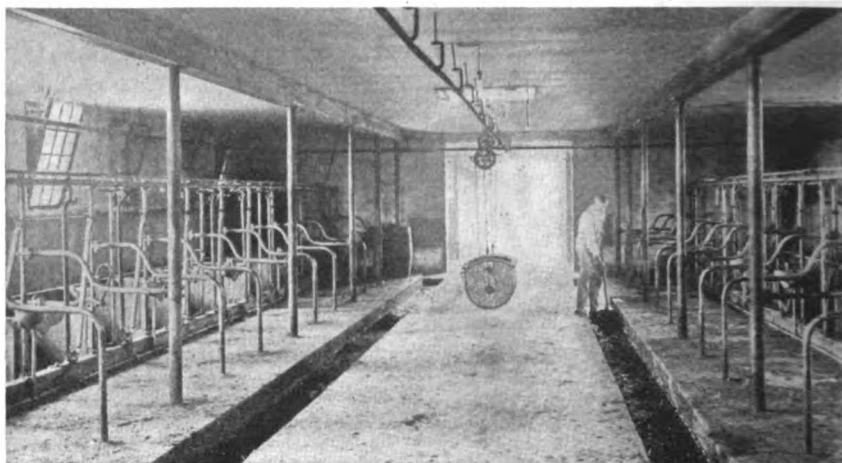
By PROF. IVAN WRIGHT

THE Federal Farm Loan Act provided for two branches of banking under the Federal Farm Loan System. One of these branches, the Federal land banks, was discussed in the preceding article published in *FARM MECHANICS* last month. The second of these branches, the joint stock land banks, will be discussed in this article.

The drafters of the Act realized the wide variation of the needs of farmers for mortgage loans. There are farmers who have 80 acres of land, others who have 160 acres, and still others who have 320 and on up. All these different grades of farmers have different financial needs. A farmer on 80 to 160 acres of general farming land may only need a loan of \$10,000, but those farmers who are operating larger farms would be very greatly inconvenienced by this limitation of the maximum loan of \$10,000 which was placed upon Federal land banks. Congress at present is considering a bill increasing this limitation to \$25,000. Moreover, in many parts of the country the number of farmers who wish to borrow in a single community is not large enough to meet the requirements for organizing a National Farm Loan Association which is necessary in order to borrow thru the Federal land banks. Consequently there must be some provision made to

take care of these loans outside of the scope of the activities of the Federal land banks. To meet these needs provision was made for joint stock land banks organized and operated by private individuals, but supervised by the

of lending on first farm mortgage securities and issuing farm loan bonds. These banks must have a board of directors of not less than five members. All the share holders in each of the joint stock land banks are individually



Well Equipped Dairy Stables Are Paying Investments.

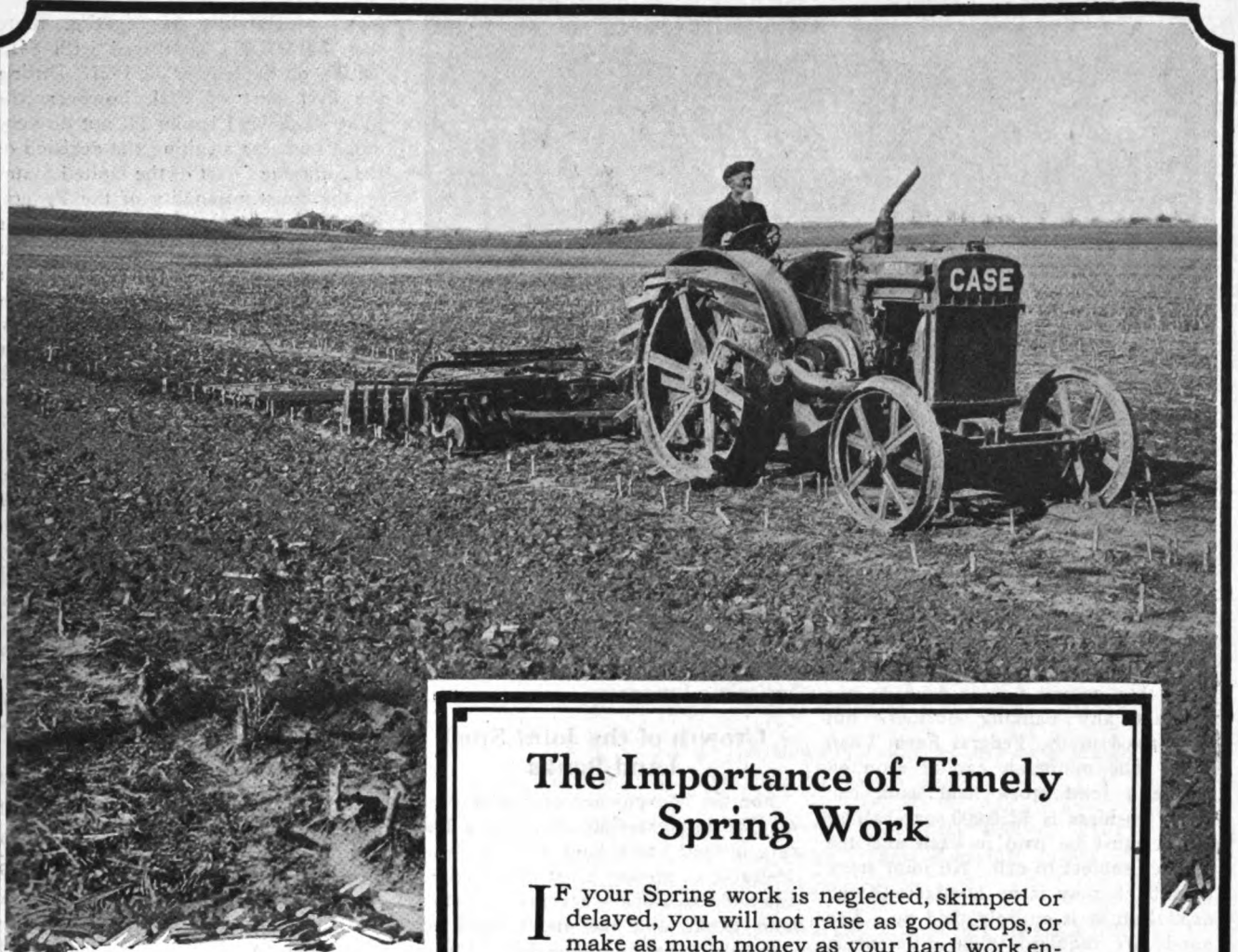
Federal Farm Loan Board in their major activities and subject to the provisions of the Federal Farm Loan Act and such other rules and regulations as might be imposed upon the system from time to time.

Any ten or more persons may organize a joint stock land bank for the purpose of carrying on the business

liable for the indebtedness of the bank to the extent of their stock holdings in addition to the stock itself. The banks have the same powers as the Federal land banks except for certain restrictions. Among the restrictions are the provisions that shareholders have one vote for each share of stock; the banks are forbidden to issue bonds for more



A Group of Modern Farm Buildings Such as Every Farmer Wants and Which the Federal Banks Will Help Him Get.



The Importance of Timely Spring Work

IF your Spring work is neglected, skimped or delayed, you will not raise as good crops, or make as much money as your hard work entitles you to. It is maddening to have important work held up by insufficient power when you realize that it is costing you money you cannot afford to lose.

This is one great advantage of the Case tractor—it gives you better control of these conditions. If it did no more than this it would be entitled to the consideration of every good farmer.

The Case tractor provides efficient power for Spring work. It enables you to set a program of work and follow it. With a Case you can prepare better seedbeds and get them finished for the best planting time. This goes a long way toward insuring quicker, stronger germination of seed, sturdy growth and safe maturing of crops, with consequent higher quality, bigger yields, better grades, higher prices and larger profits.

There is no longer any reason why you should take chances with your profits. Write for a copy of "*Better Farming With Better Tractors*" and learn the many advantages of using Case tractors.

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CASE
POWER FARMING
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NOTE: We want the public to know that our plows and harrows are NOT the CASE plows and harrows made by the J. I. Case Plow Works Company.



Orchardists Need Modern Equipment if Their Operations Are to Be Profitable.

than fifteen times their capital and surplus; they cannot receive deposits nor transact any banking business not authorized in the Federal Farm Loan Act. The minimum capital required before a joint stock land bank can begin business is \$250,000, one-half of which must be paid in cash and the balance subject to call. No joint stock land bank may issue bonds until the capital stock is entirely paid up. The bonds are required to be different in form and color from the Federal land bank bonds so that they may be readily distinguished. Loans made by joint stock land banks on farm lands must be located in the same state as the principal office of the bank making the loan or in one adjoining state. The interest rate cannot exceed 6 per cent and in no case more than 1 per cent above the rate paid on the last issue of bond. No commissions or other charges not authorized by the Federal Farm Loan Board may be imposed.

The joint stock land banks were free to loan any amount to one individual under the original act provided other requirements of the law were met. However, the Federal Farm Loan Board has ruled that the maximum loan of a joint stock land bank to one individual may not exceed \$50,000, and for banks having only \$250,000 in capital the maximum cannot exceed \$37,500 to one individual. The joint stock land banks were also exempt from the specific limitation imposed upon Federal land banks that the purpose of a loan must be to provide capital for agricultural development. However, the Federal Farm Loan Board has ruled that the joint stock land banks must adhere to this requirement as imposed upon the Federal land banks and make

loans only to provide for capital for agricultural purposes.

Growth of the Joint Stock Land Banks

For the convenience of readers who may be interested in obtaining a loan thru a joint stock land bank it seems desirable to present a list of the names and addresses of the several joint stock land banks and the states in which each may operate. The list of those banks in active operation at present is shown in the table at the bottom of the page.

Anyone wishing to borrow thru any of the above joint stock land banks or any of those which are now in the process of organization should address his communication direct to the bank or one of the banks which are making loans in his state, as can be ascertained from the table. The joint stock land banks have done a very large business. Up to September 30, 1922, the several joint stock land banks operating in the states of Iowa, Illinois, Minnesota, Wisconsin and Indiana had

loans outstanding aggregating more than \$81,000,000, compared with \$41,000,000 on September 30, 1921. During the first part of 1921, however, the joint stock land banks did not do very much business awaiting the decision of the Supreme Court of the United States on the constitutionality of the Federal Farm Loan Act. This decision was given on February 28, 1921. Further delays in their operations during this period was the legislation pending regarding the maximum rate of interest borne by their bonds which legislation was not completed until August, 1921. Despite these conditions, however, the joint stock land banks have experienced an admirable development. They are organized on very sound principles and operate on a conservative basis. Farmers seeking loans for a long time and loans which may be paid off by installments will find the joint stock land banks very desirable institutions with which to deal.

The basis for a typical loan made on a corn belt farm of 160 acres as stated by President Guy Huston of the Joint Stock Land Bank of Chicago would be as follows:

Land alone at \$225 per acre.....	\$36,000
Permanent buildings, drainage, fencing, wells, etc.....	12,000
Personal property, implements, seed grain, cattle, horses, hogs, feed, etc.	8,000
Total	\$56,000

On such a farm in the hands of an experienced, progressive, thrifty farmer, a joint stock land bank will loan not to exceed \$16,000, which, of course, is a first lien on the land and permanent improvements and the semi-annual installments will be the first obligations met from the sale of products of the farm.

The joint stock land banks like the Federal land banks cannot loan more than 50 per cent of the appraised value of the land for agricultural purposes and 20 per cent of the appraised value of the permanent and insured improvements. The appraisal is made by land valuation experts appointed by the Federal Farm Loan Board. These appraisers are very skillful investigators

Name of Bank—	Location—	States in which Banks Operate—
Iowa Joint Stock Land Bank.....	Sioux City, Iowa.....	Iowa, South Dakota
Virginian Joint Stock Land Bank.....	Charleston, W. Va.....	West Virginia, Ohio
Fletcher Joint Stock Land Bank.....	Indianapolis, Ind.....	Indiana, Illinois
First Joint Stock Land Bank.....	Chicago, Ill.....	Illinois, Iowa
Liberty Joint Stock Land Bank.....	Salina, Kan.....	Missouri, Kansas
Mississippi Joint Stock Land Bank.....	Memphis, Tenn.....	Tennessee, Mississippi
Arkansas Joint Stock Land Bank.....	Memphis, Tenn.....	Tennessee, Arkansas
Lincoln Joint Stock Land Bank.....	Lincoln, Neb.....	Iowa, Nebraska
Bankers Joint Stock Land Bank.....	Milwaukee, Wis.....	Minnesota, Wisconsin
First Joint Stock Land Bank.....	Fort Wayne, Ind.....	Ohio, Indiana
First Joint Stock Land Bank.....	Minneapolis, Minn.....	Minnesota, Iowa
Illinois Joint Stock Land Bank.....	Monticello, Ill.....	Illinois, Iowa
Montana Joint Stock Land Bank.....	Helena, Mont.....	Idaho, Montana
Fremont Joint Stock Land Bank.....	Fremont, Neb.....	Iowa, Nebraska
Des Moines Joint Stock Land Bank.....	Des Moines, Iowa.....	Minnesota, Iowa
First Texas Joint Stock Land Bank.....	Houston, Texas.....	Oklahoma, Texas
Peters Joint Stock Land Bank.....	Omaha, Neb.....	Iowa, Nebraska
Central Iowa Joint Stock Land Bank.....	Des Moines, Iowa.....	Minnesota, Iowa
Virginia-Carolina Joint Stock Land Bank.....	Norfolk, Va.....	Virginia, North Carolina
Southern Minnesota Joint Stock Land Bank.....	Redwood Falls, Minn.....	Minnesota, South Dakota
Dallas Joint Stock Land Bank.....	Dallas, Texas.....	Oklahoma, Texas
San Antonio Joint Stock Land Bank.....	San Antonio, Texas.....	Oklahoma, Texas
California Joint Stock Land Bank.....	San Francisco, Cal.....	California, Oregon
Lafayette Joint Stock Land Bank.....	Lafayette, Ind.....	Indiana, Illinois



The Longest Wearing Roofing Made

WHEREVER there is a roof—there is a MULE-HIDE product to cover it.

Long-lasting, "tuff"—with a service record "Not a Kick in a Million Feet," MULE-HIDE offers the utmost in overhead protection.

Smooth Finish and slate-coated roofing in rolls, Individual and Four-unit Shingles, including the new and beautiful Four Panel Strip Shingle, are a few of the best known of the MULE-HIDE line. Each one built of the same all-rag felt, thoroughly saturated and coated in a dense Mexican Asphalt, and, in the case of the slate-coated goods, covered with a high quality slate in natural, unfading colors.

It is because of this wide range of products that MULE-HIDE specially recommends itself for use on the farm. The barn, the garage, the home, the silo and the many buildings peculiar to the farm alone, are covered economically with the roofing built especially to fit their own particular need.

When you build or re-roof look up the MULE-HIDE dealer in your town. He has the solution of your roofing problems.



The Lehon Company

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CHICAGO

"Not a kick in a million feet"

and up to the present have used very conservative and sound judgment. The appraising of farm lands is a business requiring a great deal of technical information and accuracy is gained by experience. As the system goes on and appraisers gain more experience and more technical knowledge of the factors affecting land values it seems that an accurate valuation of farm lands for agricultural purposes may be approached and thereby avoid both overvaluations and under-valuations.

The appraising of farm land requires men who have made a life-study of this business. The displacement of men who have had a few years of experience in land valuation is a most undesirable thing. It is hoped that the Farm Land Appraisers' Institute may develop men who are willing to devote their entire lives to this occupation because the fundamental basis of all farm loans both from the standpoint of borrower and lender is the proper valuation of the land itself. However, the land itself cannot be taken alone when considering the value of the farming unit. The manager of the farm is just as important an item. The appraiser, therefore, must be able to judge men and calculate the value of the brains on the farm as well as the value of the land.

Bonds of the Joint Stock Land Banks

Before joint stock land banks may issue farm loan bonds a written application for the same must be made to the Federal Farm Loan Board thru the district registrar who is custodian of the securities of the land banks of each district. The farm mortgages to be pledged as security for the bond issue are deposited with the registrar and such other information as the Federal Farm Loan Board may require. Upon delivery to the registrar of \$50,000 of complete and approved farm mortgages

by a joint stock land bank, the registrar approves and forwards these mortgages to the Federal Farm Loan Bureau at Washington, if all conditions have been satisfactorily met. Upon the approval of the Federal Farm Loan Board the registrar is authorized to countersign and deliver to the joint stock land banks a like amount of joint stock land bank bonds which are then executed by the officers of the bank. The principal of these loans in the hands of the registrar are reduced by semi-annual payments and the bank is required to deposit new securities or to purchase in the open market and cancel bonds equal to a like amount. The registrar keeps practically a duplicate set of the books of the banks, as he is required to sign every bond and is custodian of all securities. These records are kept in such a way that the registrar knows whether the installments on the loans held by him are delinquent and if default is made the payment of the entire principal or any of the covenants of a mortgage the bank is immediately called upon to substitute other approved securities. If the bank fails to do this promptly the Federal Farm Loan Board is authorized under the law to take charge of and liquidate the business of this bank.

Federal farm loan bonds are issued in denominations of \$50, \$100, \$500 and \$1,000. Bonds of these denominations appeal to all classes of investors, the small as well as the large investor. These bonds are exempt from all taxes and bear a very remunerative rate considering this exemption. Each land bank is primarily liable for its own issue of bonds. Each bank is required to notify the registrar promptly of all payments of interest and principal on pledged mortgages. The registrar is required to see that all such payments are properly credited. The payments made on farm loan bonds may be used

as follows by the joint stock land banks:

- (a) Pay off farm loan bonds as they mature.
- (b) Purchase at or below par farm loan bonds.
- (c) Loan on first mortgage as prescribed in the Act.
- (d) Purchase of United States Government Bonds.

The Farm Mortgage Banker and the Farmer

The service of the mortgage banker in ascertaining farmers' needs for credit, valuing their farms and other assets, and the selling of securities based upon farm lands to investors is far greater than usually believed by farmers and investors. The farmer needs credit for a long time so that he can pay for his farm and other working capital out of his earnings over a period of years. On the other hand, the investor wants an investment that is safe both as to principal and interest. The farm mortgage banker is the skilled agent who serves both of these lines of customers. He stands ready to investigate the farmers' needs and then present his securities to the money lender. With the mass of borrowing farmers in the agricultural states far from the money lenders in the cities and industrial communities without the service of the farm mortgage banker it would be impossible for the farmer to get the credit he needs or the lender to obtain the security which he now has for his funds.

The farm mortgage business has been very greatly abused. Loan sharks have encouraged farmers to buy land that should never have been farmed. All kinds of tricks have been played upon the farmer who knows little about the legal aspects and loopholes in land titles and farm mortgages. The United States is the last of the important agricultural countries to provide a system, national in character, for handling the farm mortgage business. With the Federal Farm Loan System and its two branches of banking, the joint stock land banks and the Federal land banks almost all legitimate needs for long term agricultural credit can be taken care of, no matter in what remote part of the country situated. This system of banking is a step in the right direction and the defects can be remedied.



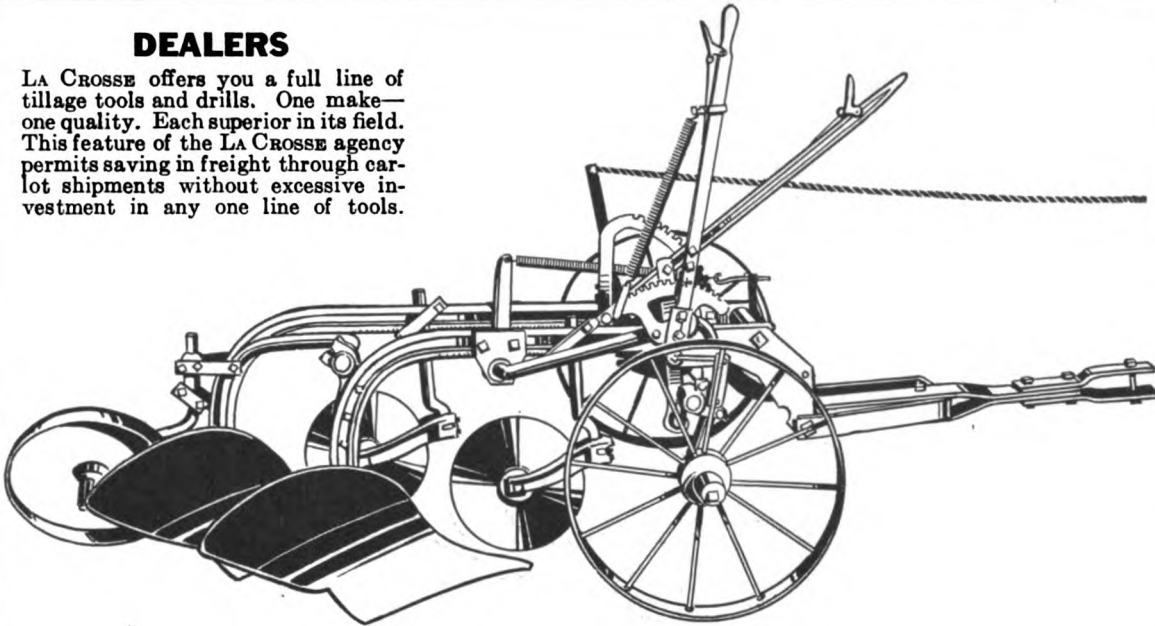
MORE than 25,000 farmers adopted the use of self-feeders for hogs in 1921, following demonstrations by extension workers, according to reports to the United States Department of Agriculture. Demonstrations by extension workers in the methods and importance of spraying fruit trees have resulted in farm orchards being sprayed on over 37,000 farms in 1921.



Corn Belt Farmers Made Profitable Use of the Tractor, Especially During the Intense Hot Summer Days.

DEALERS

LA CROSSE offers you a full line of tillage tools and drills. One make—one quality. Each superior in its field. This feature of the LA CROSSE agency permits saving in freight through carlot shipments without excessive investment in any one line of tools.



In The Field

These 6 Features Give You a Better Job of Plowing With Less Trouble to the Operator

Note the Following Exclusive Features:

- 1** Plow is adjustable to cut 10, 12 or 14 inch furrows.
- 2** Allows adjustments to varying soil conditions, eliminates loss of time and undue strain on equipment.
- 3** Hand lift device enables operator to lift plow to full height when tractor is not in motion; thus clearing the ground about 9 inches and insuring against stalling tractor when plowing in wet and heavy soil.
- 4** Adjustable rear wheel throws weight of plow and pressure of furrow slice on wheel rather than on landside, insuring light draft and uniform furrows.
- 5** Depth and leveling levers are within easy reach of operator. Not necessary to get off the seat to make either adjustment.
- 6** Special design flexible hitch keeps plow in uniform depth even when traveling over uneven ground.

POWER LIFT—Positive and Quick Acting
WEIGHT—700 Pounds
CONSTRUCTION—Substantial Yet Light in Draft

LA CROSSE **NO. 12**

The lighter running, easler operated, better controlled plow for use with FORDSON and other light tractors. Made by

LA CROSSE PLOW CO., La Crosse, Wis.
"MAKERS OF LIGHT DRAFT PLOWS"

Foundation Walls of Concrete

Strong, Durable Materials Used to Set Farm Buildings on Are Easy to Mix and Place

By H. COLIN CAMPBELL

EVERY building should rest on a strong, durable foundation. Because it insures uniform distribution of the weight of the building on the soil, such a foundation prevents settlement and cracking of walls, reduces maintenance and repair costs, and prolongs the life of the building. Concrete meets all requirements so well that it is now being generally used for basement and foundation construction. Concrete is always used to support skyscrapers, yet it is so moderate in cost that it is economical to use it for foundations of even the smallest farm buildings. Sand and pebbles make up the bulk of a concrete mixture and can usually be obtained locally at moderate cost, sometimes for only the labor of digging. Forms are easily made by anyone having average carpenter skill and mixing and placing is done by common labor under intelligent supervision. Concrete foundations are uninjured by freezing, thawing or other weather changes.

Concrete foundation and basement walls are of two types, those made of concrete cast in place and those built of precast units, such as concrete block. Both types have proved satisfactory. Concrete block walls are usually less expensive than solid concrete walls, but where loads are very heavy or where there is a severe side thrust of soil as in deep cellars or hillside locations solid concrete walls are usually preferable. Where unusual strength is required steel reinforcement and concrete pilasters or buttresses are easily added.

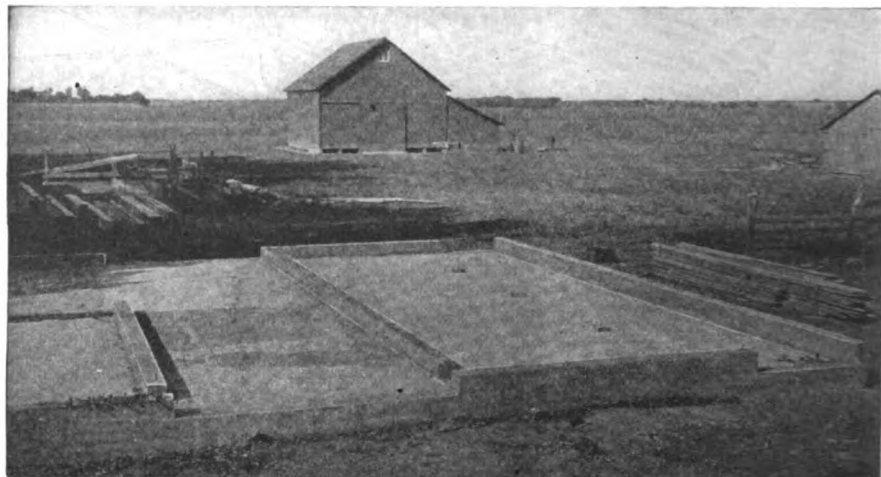
Concrete foundation walls and footings must have sufficient strength to support the weight of the building safely and without settlement. When the foundation serves as a basement wall it must have strength to withstand the

lateral pressure of the soil and also must be watertight.

For all types of buildings it is essential to extend the foundation below possible frost penetration, even tho firm bearing soil is found at a shallower depth. Then the foundation will not be upheaved by freezing. The depth

Soft clay.....1 ton per square foot
Wet sand2 tons per square foot
Firm clay.....2 tons per square foot
Fine and dry sand....3 tons per square foot
Hard dry clay.....4 tons per square foot
Coarse sand.....4 tons per square foot
Gravel6 tons per square foot

To calculate the proper width of footing, it is necessary to estimate the load to be carried (the weight of the build-



Concrete Foundation and Floor for a Corn Crib and Granary. Bolts have been embedded in concrete for the attachment of sills.

to which frost penetrates varies and may be as much as 6 feet in sections where winters are severe.

The base of the foundation is usually given a "spread" or "footing" to distribute the weight of the building over a larger area than covered by the area of the base of the walls. In determining the width of footings the character of the soil, as well as the weight of the structure and its contents, must be taken into account as the load bearing capacities of different soils vary.

The following table indicates the safe loads for various soils:

ing and contents) and to ascertain or make reasonable assumption of the bearing power of the soil where the building is to be located.

Under the basement walls of a barn, a concrete footing 2 feet wide and 12 inches deep will usually be sufficient. Interior posts supporting mow floors must also have carefully designed footings to carry the maximum load. Small residences generally require footings 18 inches wide and 12 inches deep. Footings 12 inches wide and 8 inches thick will serve for farm buildings such as hog-houses, poultry houses, milkhouses and buildings of that size.

A foundation wall 8 to 12 inches thick is generally ample for small structures not more than two stories high. Basement walls for residences are also made from 8 to 12 inches thick. Small structures, such as poultry houses, milkhouses and garages, require foundation walls from 6 to 8 inches thick.

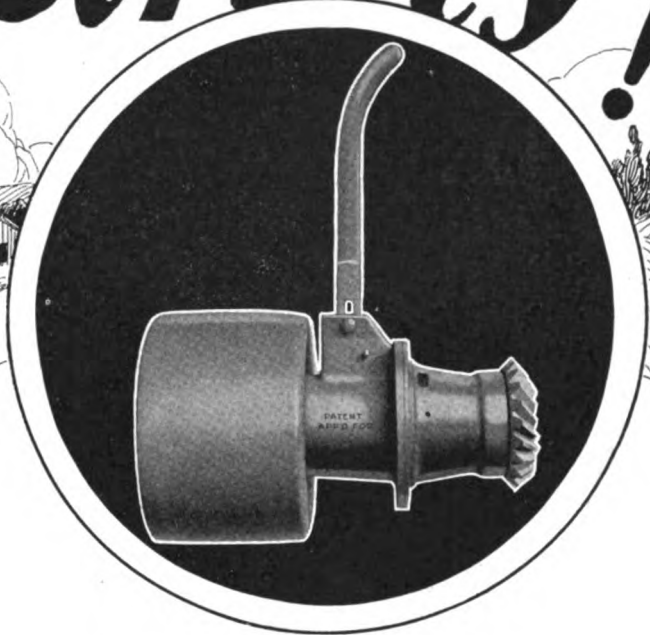
The following table gives the thicknesses of basement walls and upper story walls of residences and apartment buildings recommended in the American Concrete Institute Specifications for Concrete Building Block, Brick and Tile:

Number of Stories	Base-ment Inches	1st Story Inches	2nd Story Inches	3rd Story Inches	4th Story Inches
1	8	8	8	8	8
2	10	8	8	8	8
3	12	12	10	8	8
4	16	12	12	10	8



A Typical Monolithic or Solid Concrete Foundation in Place After the Forms Have Been Removed. This is the strongest type of foundation that may be built under a house.

Fordson's Belt Power Instantly!



WRITE For FREE BOOKLET

IF your Fordson dealer happens not to have a supply, write us for Booklet describing and illustrating this wonderfully simple and convenient Smith Unit Pulley Clutch. Its small cost will surprise you.

KEEP your Fordson *busy!* It'll pay you dividends that no other investment on your farm can equal if you'll only let it!

When field work is impossible, keep Fordson a-turning on those dozens of profitable *belt-power jobs*.

Put on a Smith Unit Pulley-Clutch and switch from field work to belt power at a lever's touch! Stays on all the year 'round ready for instant use. Back into the belt *under power*. All set? Touch the lever and the machinery hums!

Precision-made, complete with the finest pulley you ever used!

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DALLMANN MACHINE & MFG. CO.

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MILWAUKEE, WIS.

**SMITH
UNIT** **PULLEY-CLUTCH
for Fordsons**

WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

The usual practice is to lay monolithic concrete footings for all types of foundation walls. They are easy to build and insure uniform distribution of the weight of the building on the soil. They provide an even surface on which to start laying the wall proper, whether block or monolithic.

In building foundations for small structures without basements, the earth walls of the foundation trench may be so firm as to make it unnecessary to use specially built forms for that part of the wall below grade. The trench should be excavated carefully so that the sides will be even and vertical, and care should be taken not to knock earth into the trench when depositing or spading concrete. Planks placed alongside the trench will help to protect the edges and provide a convenient runway for wheelbarrows. In soft ground and for walls above ground levels, forms are required.

Forms or molds are the receptacles in which concrete is placed so that it will have the desired shape or outlines when hardened. Forms are usually built of wood. Where a very regular and even surface finish is required, planed lumber should be used. Well seasoned, air dried lumber is best, as green lumber will shrink if not kept wet, thus opening cracks in the forms thru which water carrying cement will leak when the concrete is placed. It is best to use lumber that has been dressed at least on one side and on the edges, because the boards will fit closely together and the planed surface next to the concrete will reduce the labor of removing and cleaning forms. Tongued and grooved lumber is often used for form sheathing, and is recommended for tight forms. Form lumber should be uniform in thickness, as any inequalities of thickness cause unevenness on the concrete surface.

Beveling one edge of each form board reduces the tendency toward bulging which might result from swelling of the boards due to absorption of moisture from the concrete. Any expansion that occurs is taken up by the compression of the fibers in the beveled corner.

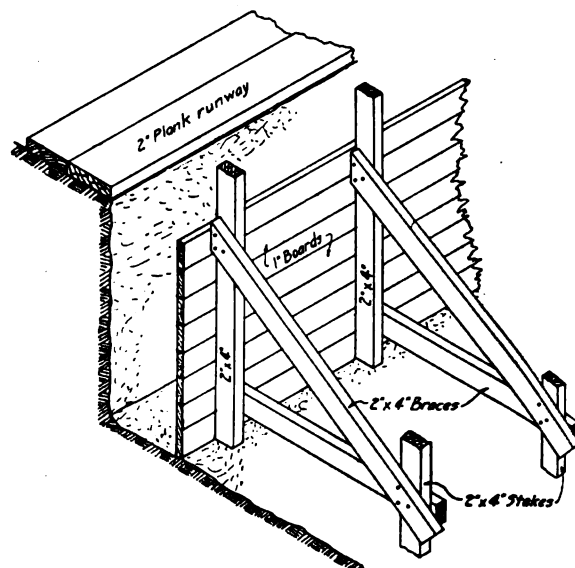
Posts and studs for supporting forms must be sufficiently stiff and strong to hold forms in true line. Forms should always be rigid and well braced in order to withstand the pressure of wet concrete and produce a straight, even wall without bulges or depressions. For keeping inside form surfaces the proper distance apart, inner and outer sections should be clamped or wired together, against wood "spacers" or "spreaders" of a length equal to the desired wall thickness. The spreaders are removed as the forms are filled with concrete.

Forms should be so built that if it is desired to use them again or to use the lumber for other work, they can be "knocked down" with least injury to the lumber. Screws or special double headed nails are often used instead of common wire nails for making forms.

To prevent concrete from sticking to the forms and to aid in their removal, crude oil, soft soap or whitewash should be painted on the forms before placing concrete, this being repeated each time the forms are used.

If the foundation is located in soil that is not well drained and is to form part of the enclosure of the basement or cellar, a 1:2:3 mixture (1 part cement, 2 parts sand and 3 parts pebbles or broken stone) is recommended for such work to insure watertight construction. For most foundation work a 1:2½:4 and in some cases a 1:2½:5 mixture will be found satisfactory. Sand should be clean and well graded in size up to one-fourth inch. Pebbles or crushed stone should also be clean, hard and well graded, ranging in size from one-fourth inch up to 1½ inches or more, depending on the thickness of the foundation wall.

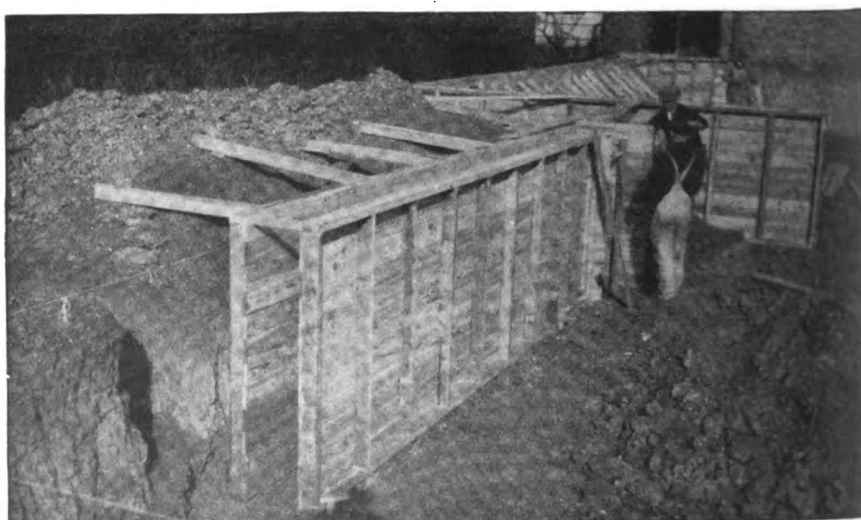
Use only enough water to produce, after thoro mixing, a plastic workable mixture. Too much water produces a sloppy mixture, resulting in a concrete of inferior strength and too little water results in a porous concrete also deficient



Forms for Foundation Walls Where the Embankment Serves as the Outer Form. The drawing shows how the forms are constructed and the materials of which they are built.

in strength. From 6 to 7 gallons of water per sack of cement will usually produce about the right consistency for a 1:2½:4 concrete.

Concrete should be placed in the forms in layers of from 6 to not more than 10 inches deep, and in a continuous operation, if possible, to avoid construction seams. Concrete of the consistency described above will require only light tamping, but should be well spaded next to form faces to obtain smooth, even surfaces. It is well to complete a foundation or wall in one day's operation if possible so as to avoid construction seams. If it is necessary to stop work before a wall can be finished the concrete should be leveled in the forms and the surface roughened by scratching



Forms, When Built in Sections, Are Easily Erected and Removed and May Be Used Many Times. Sections should not be too long or too heavy for two men to lift. The forms shown in this picture would be more convenient if made in sections half as long.

1

Rigid Frame—will not get out of line—allows easy inspection of all tractor parts.

2

Extra rigidity between engine and frame secured by anchoring engine with six long steel bolts

3

Radiator designed to insure strength, long life, easy cleaning and quick replacement in case of accident.

4

Front axle design improved stronger, more flexible in movement, greater rigidity

5

Rear axle bearings have larger bearing and thrust surfaces—perfect adjustment of driving gears.

22

Tractor weight reduced; stronger, more durable construction throughout; improved materials, manufacturing facilities and workmanship

21

Internal gears on drive wheels better protected; drive wheels adapted for multiple lug arrangement to suit all kinds of soil.

20

Large, roomy platform; ample leg room when seated; plenty of space to move about

19

Simplified fuel pipe line construction and improved two compartment fuel tank of 23-gallon capacity.

18

More compact, redesigned transmission case—quick inspection and adjustment

17

Simplified, more efficient Hart-Parr Kerosene Shunt and exhaust manifold.

16

Improved vanadium steel exhaust valve springs—the last word in exhaust valve spring construction

15

Push rod and rocker arm assembly enclosed, simplified and means provided for quick, positive adjustment.

14

Motor completely enclosed—only one minute required to remove enclosure for motor adjustments

13

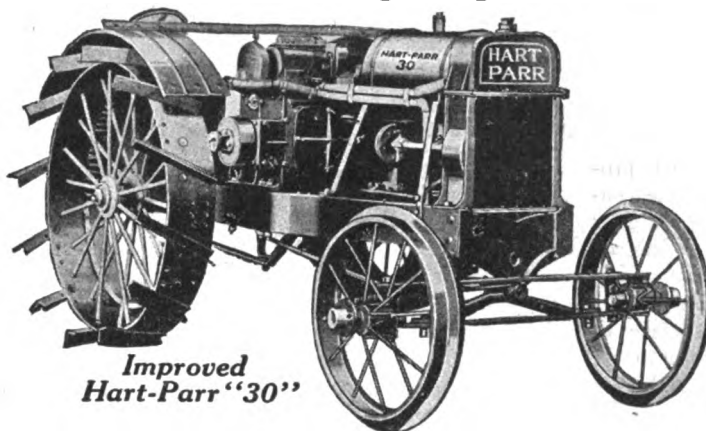
Improved automatic throttle action—extra durable construction of parts and connections.

12

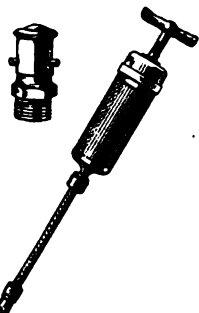
Improved intermediate bearing added to differential shaft has many advantages.

Hart-Parr is Alemited!

One of the 22 Big Improvements



Improved Hart-Parr "30"



The famous Alemite High-Pressure Lubricating System—the last word in present day lubrication—has been added to all Hart-Parr Tractors. All bearings not lubricated by force feed are equipped with Alemite ball-check fittings. Lubrication is easily and quickly accomplished merely by attaching the handy Alemite Grease Gun to these fittings. The Grease Gun is furnished as standard equipment. This means greatly increased lubrication efficiency with less work and attention. Illustrations at left show a typical fitting, with easily removed, protective Dust Cap, and the Grease Gun.

This important improvement is only one of 22 equally as advanced refinements in Hart-Parr construction. These 22 improvements—the accomplishment of 22 years' experience—added to the acknowledged superior durability, economy and efficiency of the Hart-Parr, are attracting wide attention from tractor buyers. The Hart-Parr Tractor offers dealers a bigger sales opportunity than ever, while our improved dealer's franchise insures interesting profits. Write at once for full details.

HART-PARR COMPANY

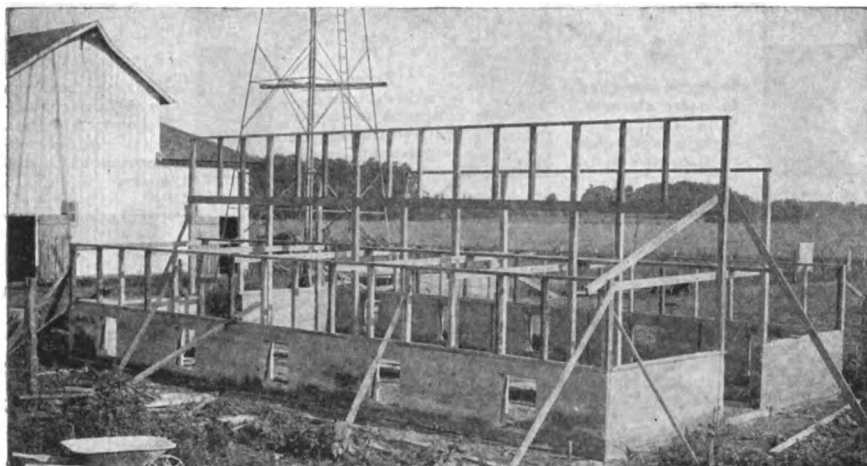
732 Lawler Street

Charles City, Iowa



11

Improved centrifugal governor accurately controls engine speed—no racing after long usage.



A Sanitary, Permanent Wall Is Formed by Carrying the Foundation of This Hog House Three Feet Above Grade.

it or by placing large pebbles in it projecting about half way out of the concrete. This will help to secure a good bond between old and new layers of concrete when work is resumed.

Before depositing an additional layer of concrete the roughened surface of old concrete should be scrubbed to remove any dirt or scum and, just before placing new concrete, it should be painted with cement and water mixed to the consistency of thick cream.



Fanny Wanted to Sell— John Didn't

(Continued from page 36)

John was explaining the matter to old Simeon Foss some days later. It was a warm spring day and old Simeon, who had dropped in at the farm, had coaxed an old overall suit from his host and was helping him putter around at cleaning the garden.

"Yes, it was funny," John was saying. "Here you told me to put in that electric plant and fix up the home all modern, and you said you'd practically guarantee it would sell. I did that and the minute Fanny saw it she decided she didn't want to sell it at all."

"Well, I reckon that was funny," old Simeon agreed with a grin, "but the funniest part of it is that that was my idea all the time."



Letters Home from College

(Continued from page 40)

that its leaves have smooth edges, instead of the toothed edges of the other barberry.

I don't remember that we had any of these barberry bushes growing on our place, but if we have let's get them out early this spring before they have a chance to damage the grain. There must be some in our neighborhood, however,

because I have often seen badly rusted fields.

The Department of Agriculture and the Conference for the Prevention of Grain Rust are doing a great work for the farmers. But the farmers themselves can help. They can hunt out the bushes and then dig them up and destroy them. It is important that they get all the roots, as a piece left in the ground will produce a high shoot in one season and a new bush is well started on its mission of damaging the grain crops.

Well, I suppose that spring work at home is well on the way. Write and tell me all about it. It soon will be house-cleaning time for mother. I know she'll miss my help. Evelyn tells me that she is going to Chicago for a visit. Bet she'll have a good time. She also promised to see me soon.

Once again I want to tell you how much I appreciated your letter, especially that part in which you encouraged me to write you about the things I am learning here at college. However, I'll be home soon for the summer vacation, and then I'll tell you a whole lot of things I have in my mind.

Your loving son,

BILL.



THE Pennsylvania Experiment Station reports the results of experiments conducted for 10 years in six bearing apple orchards, located on varying soil types, two being in sod and four receiving the usual orchard tillage. The results demonstrated conclusively that proper fertilization is essential to profitable orcharding and nitrogen is far and away the most important factor in orchard fertilizing. Much better results follow its use in combination with phosphorus. Potash apparently, is of doubtful value in this connection.

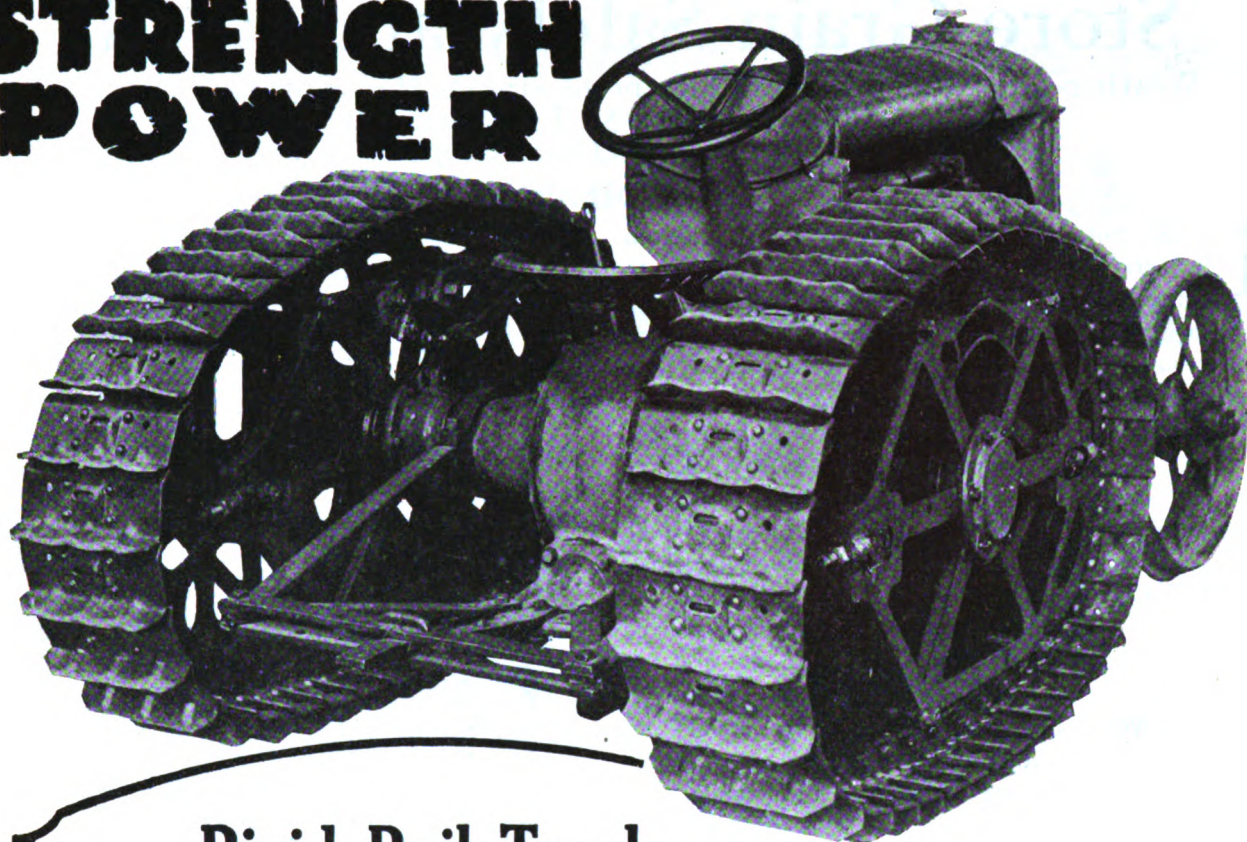


THE average yield of corn per acre in the United States varies from 14.8 bushels in Florida to 47 bushels in Connecticut, according to reports of the United States Department of Agriculture. The average for the entire country for the past 10 years is 27.1 bushels per acre. Corn is produced in every state in the Union, production ranging from around 30,000 bushels a year in Nevada to over 450,000,000 bushels in Iowa. The average yield of potatoes per acre in the United States varies from about 60 bushels in Texas to more than 200 bushels in Maine. The average for the entire country for the past 10 years is 98 bushels per acre. Flaxseed is produced chiefly in the North Central states the most important being North and South Dakota, Minnesota and Montana.



A Typical Concrete Block Foundation in the Course of Construction. This kind of foundation may be built quickly and at a minimum of expense, assuring a strong, durable structure.

STRENGTH POWER



Rigid Rail Tracks Are Built of a Powerful Steel

Owners of Rigid Rail Tracks have marveled at their ability to "stand the gaff." A great many of them have been curious enough to inquire—

"What are they made of? They sure do stand up."

So, not having anything to keep dark about it, here are the facts.

In each set of tracks there are 500 lbs. of manganese steel and 900 lbs. of high carbon steel. It's the same steel that we use to make frogs for the NEW YORK CENTRAL LINES.

Rigid Rail Tracks will DOUBLE the drawbar pull of your Fordson to over 3,000 lbs. This means higher operating efficiency of 35% without any increased cost of operation.

With these tracks the Fordson will turn shorter under load, and make it possible to operate successfully on marshy, sandy or hilly soil. In fact, we make a Crawler of your Fordson and retain Fordson economy, efficiency and service.

HADFIELD-PENFIELD STEEL CO.
BUCYRUS, OHIO

Store Grain Safely and Easily

Weather-proof Rat-proof and Fire-proof Storage House, or Crib, Equipped With Power Elevator is the Modern Farmer's Method of Housing His Grain Crops

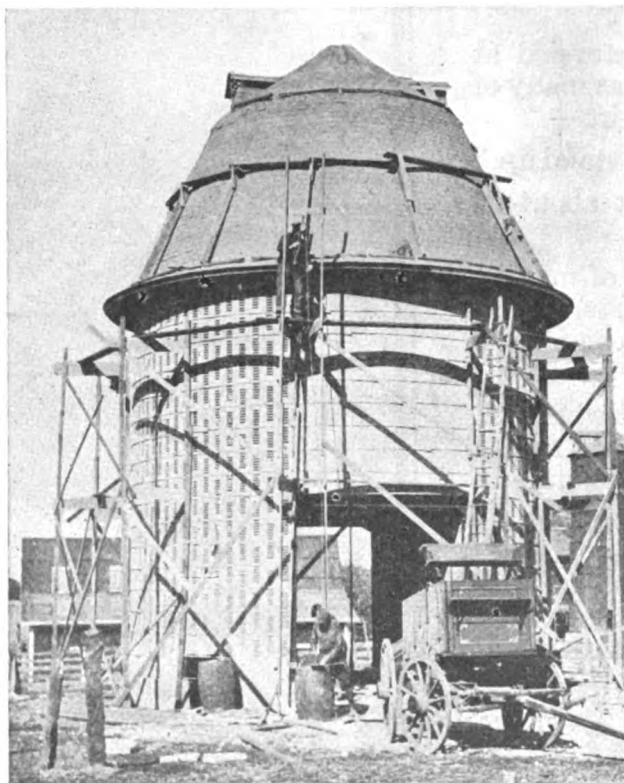
By H. MEARNS

IT has not been until recently that American farmers have paid a great deal of attention to housing their crops. With the exception of enough roughage and grains to carry their livestock from one harvest to another, practically all crops were sold as they were harvested. This method meant a dumping of crops on the market at harvest time, with a consequent break in prices, and the producer the chief sufferer. Agitation for more orderly marketing, that is supplying the demand and holding the balance of the crops so that prices will be steady, has been going on for some time, and the idea is making progress.

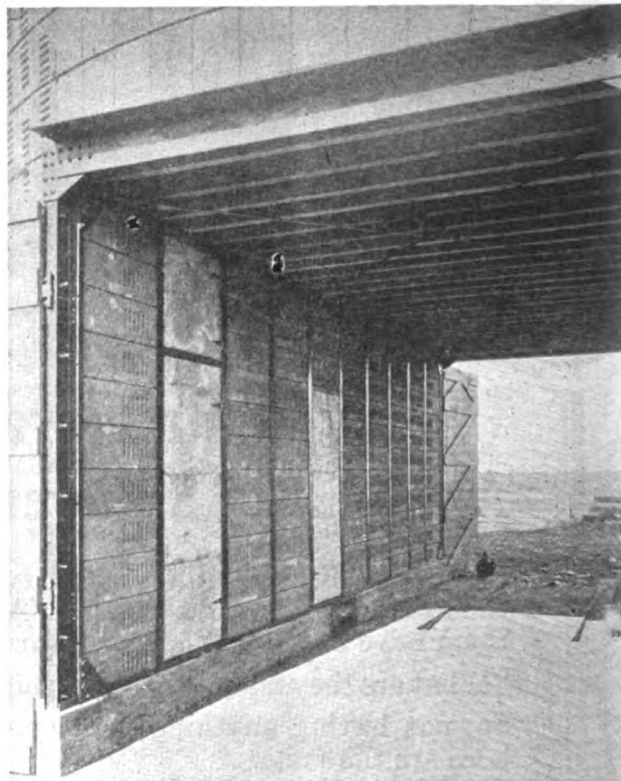
Holding grain had its drawbacks with many farmers. The loss from weather, inroads of rats and the other enemies of stored grain, such as mildew in corn and weevil in wheat, have more than offset the increase they received by delaying the sale of the crops. However, every farmer has known that hauling his wheat or oats, or barley or any other of the small grains from the thresher to the elevator has placed him in direct competition with every other grain farmer in his section. "Glutting" the market always

affects prices. Those who have not suffered by these facts have been the farmers who have provided themselves with a safe, weather proof grain storage building.

"Orderly marketing," as the American Farm Bureau Federation terms selling farm products as the demand and prices warrant, has brought about great improve-



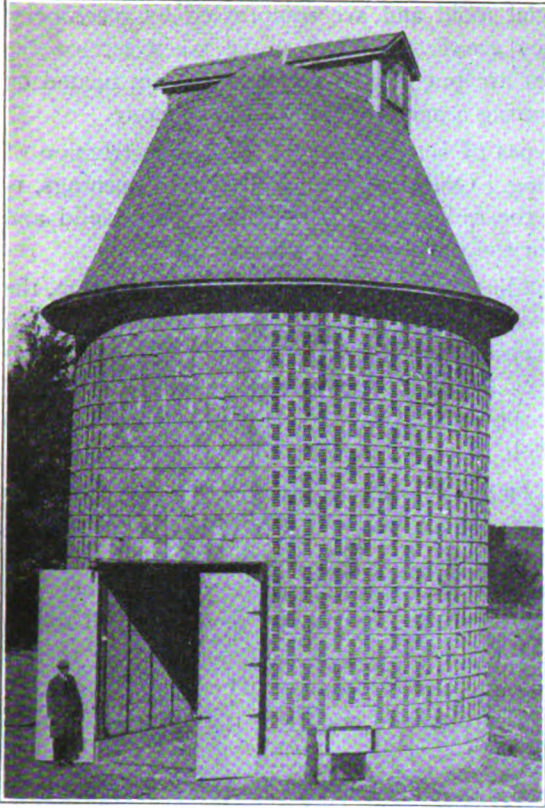
Concrete Stave Corn Crib and Granary in the Course of Construction. The staves have slotted openings, which admit air and provide ventilation in the cribs, the slats sloping so as to shed water, while the staves in the granary section over the driveway are solid. This makes a weather and rat-proof building.



Looking Thru the Concrete Stave Corn Crib and Granary, Showing the Slotted Staves of the Inside Crib Walls.

ment in the design and construction of storage houses for small grains and ear corn. Buildings that will hold the grain, protect it from weather and rats, and be so constructed as to provide for ventilation are now becoming numerous, and those farmers who have them are able to hold their crops for a favorable market without loss either in quality or quantity.

One type of these modern buildings is shown in the illustrations in connection with this article. The corn crib and granary shown in the course of construction on the first page, is constructed of concrete staves of unusual construction. The slabs of concrete are so molded that they have shutter-like openings, permitting the air to go thru freely and at the same time shedding snow and rain. In the making of the staves, the concrete is first scientifically mixed with a high percentage of cement and thoroly cleaned and washed grit of the proper size is used. The staves are molded



100 YEAR CORN CRIB

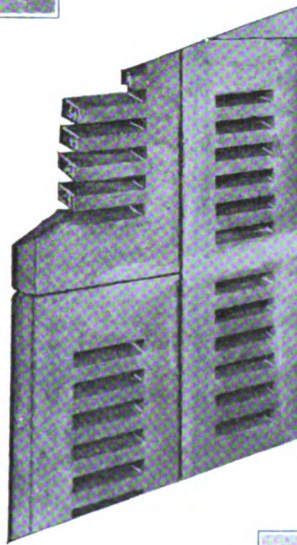
*Scientifically Constructed
of concrete and steel*

*Making it Rat Proof, Fire
Proof, Rain Proof and
Bulge Proof*

ELIMINATE LOSS

By building a
Permanent Products
**100 YEAR
CORN CRIB**

It is the strongest, most
permanent and most eco-
nomical crib to be had.



Government reports show
that 15% of the corn crops
are destroyed by rats.

Many of the old-style wood
cribs are destroyed by fire
each year.

Much corn is lost through
improper housing.

Many cribs are rendered
useless through bulging.

We put these buildings up
complete with elevators

Write for full information

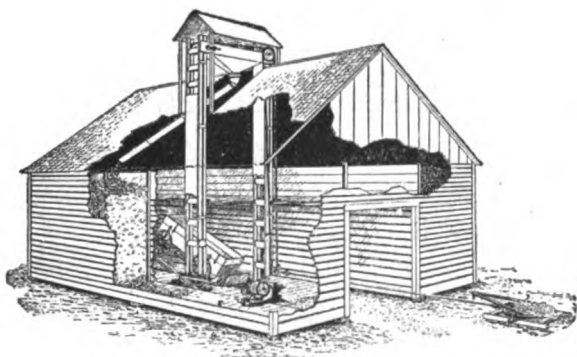
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"MEYER" CUP ELEVATORS

The easy running dependable "Meyer"



THOUSANDS IN USE

The Meyer Elevator makes no short curves and turns—has a large space at the top for the grain to empty and it delivers the grain higher in the crib than any other for the same length elevator.

CORN RUNS SAME DIRECTION AS BUCKETS

The buckets in Meyer No. 1 Elevators run in the same direction as the corn. This shells less ear corn and wastes less energy. The Meyer works easiest, gives best satisfaction, lasts longest and is the most economical elevator to install.

Meyer Doesn't Shell Corn Like Others

Albert W. Ballhoefer, Newton, Ia., writes: The Meyer is a good investment. It runs very light and does not shell corn like most others do. It works perfectly with snapped corn and is easy to install.

Write for free catalog
and crib blue prints

THE MEYER MFG. CO.

Box 342 MORTON, ILL.

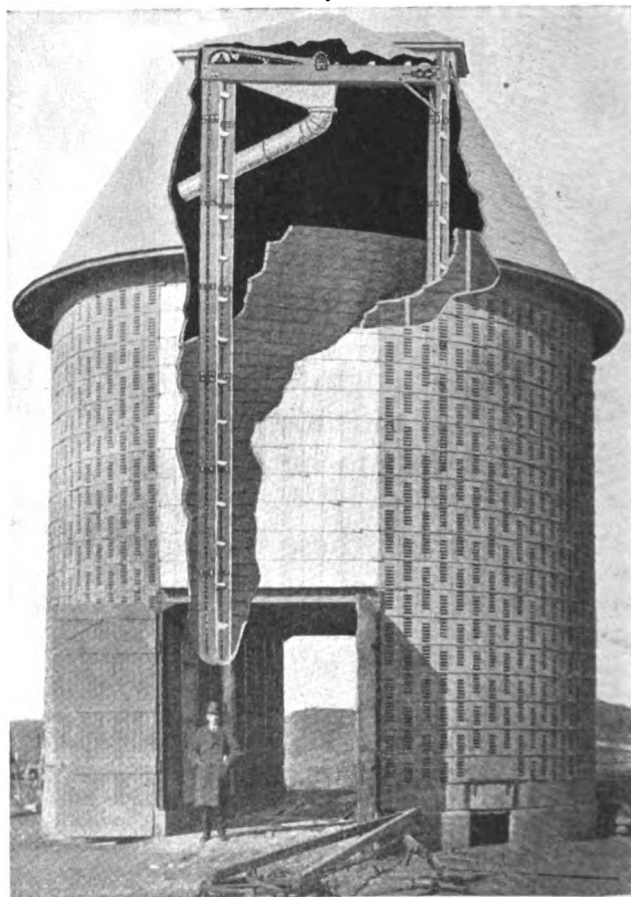
in a special mold and are compressed by machinery. After they are firm enough to be taken out of the molds that are put into vats and live steam turned on them, insuring a perfect "set" of the concrete.

Two types of staves are used in the construction of the building. One type, that with slatted openings, is used for the crib walls. The other type is solid and is used for the walls of the grain storage.

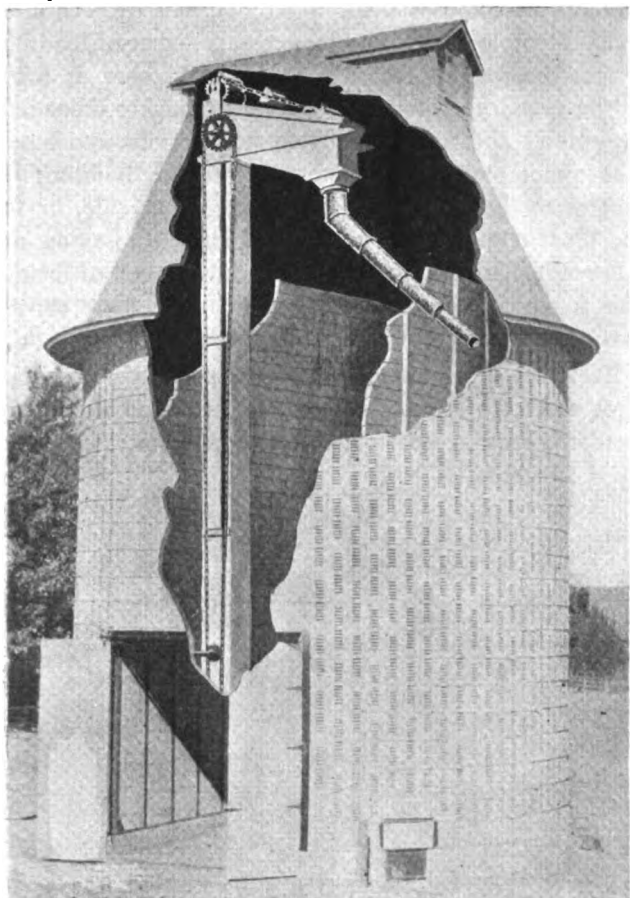
The building is erected on a concrete foundation, the circular walls being built up with the staves, which have offsetting joints in the ends. They are surrounded by galvanized steel rods, securely tightened by turnbuckles, similar to the method used in silo construction.

As can be seen by the picture showing the view thru the driveway, these buildings are made with structural steel beams, into which the crib walls fit, making strong, ventilated, rat-proof inside walls. They are thoroly bolted to the end beams and tied with cross-rods at the top. This method of construction results in a strong, practically permanent building. As every bit of it is of concrete and steel it is practically fire-proof.

The many openings both in the outside and inside walls of the crib sections insure perfect ventilation.



Crib Equipped with Power Elevator, Which Will Unload a Wagon of Grain in from 2 to 4 Minutes. Steel brackets on an endless chain carry the corn or small grains to the cribs or grain bins.



Crib Equipped with Another Type of Elevator. This is an endless belt which passes thru the floor dump and carries the grain to the swivel spout, which puts it in the cribs or bins.

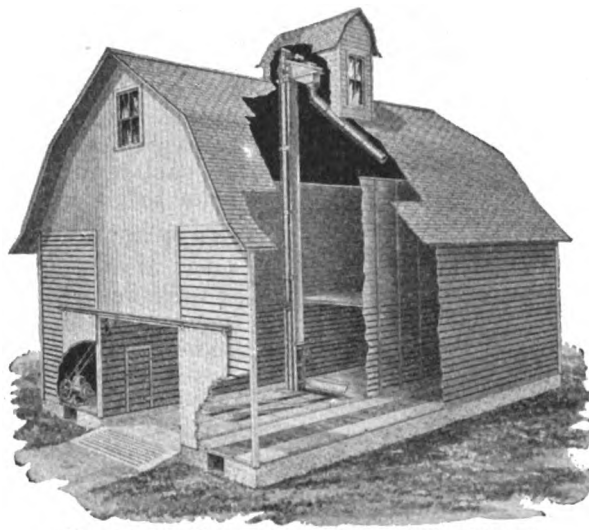
The continuous passage of air thru the corn prevents molding or heating and insures proper curing. Put up as it is by building up of staves, any size crib needed may be secured.

Such a crib as this usually is equipped with a power elevator, three different types of which are shown in the pictures with the walls cut away. All are of the bucket type, that is the elevators are equipped with buckets on endless belts, which carry the corn or grain to the cupola and spout it into either the cribs or the grain bins that are located over the driveway.

These elevators are built into the structures when they are erected. In the concrete floor of the driveway is a grain dump, which is a trough built under the floor. When the wagon-load of grain is driven into the building, the rear wheels are depressed so that the grain flows by gravity into the dump. From this dump the buckets carry the grain to the cribs or bins. These elevators do not require much power and may be operated either by a stationary gas engine installed in the building, or by a portable gas engine, or by electric motor where there is electricity for power available.

The great saving of labor in getting the crops into the cribs or bins will be readily seen, especially in a

Make It A Real Storage Plant **KEWANEE-HART** **BUCKET ELEVATOR**



Hyatt Roller Bearings are Standard Equipment

For Old Or New Cribs

KEWANEE-HART DESIGN means adaptability to wood, cement stave, or tile construction. Very little alteration is usually necessary for OLD cribs. In concrete, it's a LIFE-TIME job. Ten Models.

Why Be Satisfied

with just ordinary equipment, when at no extra cost, you can get a REAL elevator with these features:

NON CHOKABLE—So guaranteed—even in EAR CORN.

CAPACITY—15 to 30 Bu. per Min.

CHAIN TROUBLE ELIMINATED—#77 Oil Tempered Steel. Does not unhook. $1\frac{1}{2}$ times stronger than cast malleable. No hidden defects.

INDESTRUCTIBLE BUCKETS—14 gauge, 1 piece steel. $\frac{1}{4}$ Bu. Capacity.

POSITIVE DELIVERY—No carry-over—every bucket inverts.

MASSIVE CONSTRUCTION—2" and heavier lumber. $1\frac{1}{4}$ " cold rolled shafting. Self aligning boxing with hard oil cups for lubrication.

SIMPLE—No delicate mechanism. Only one pair sprockets in elevator leg.

NON-LITTERING—Both head and leg fully enclosed.

Hyatt Roller Bearings

Would you expect Hyatt's in a cheap, flimsy contraption? Hyatt's mean less friction; much less power used; easier, smoother operation; LONGER LIFE. They cost you no more with the Kewanee-Hart.

Free Plans

Free building plans and material lists. Refer your grain handling problem to our Service Department for advice. No obligation incurred.

Portable Elevators

4 Models—Engine or Horse Power—Tilting or Swivel (steel) Receiving Hopper.

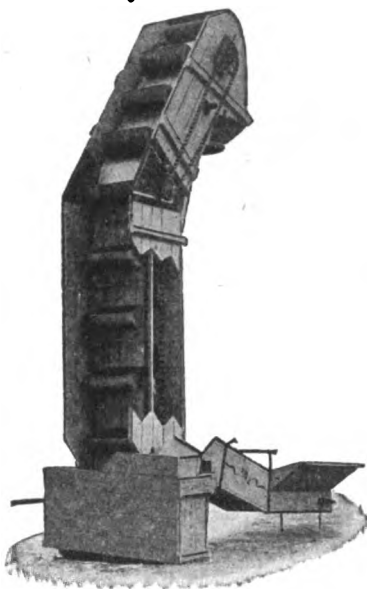
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MEADOWS

Stationary Cup Elevators

are installed entirely within the crib in a permanent manner, so as to make the entire capacity of crib available for storage. Durability results from this as weather has no effect on the machinery.



CUPS—16 x 7 x 7 inches hold practically one peck each. Fastened to attachment chain links by two $\frac{1}{4}$ in. rivets at each end, no bolts to get loose.

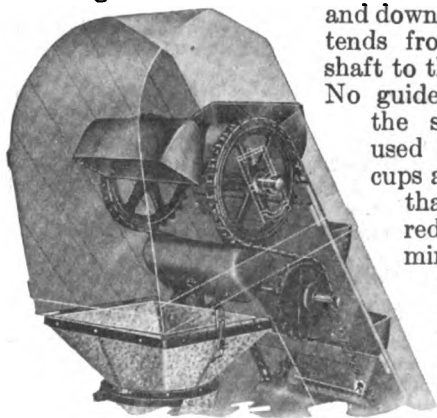
BOOT—Cast iron sides steel cover, self-aligning bearings. Is set in pit 16 in. deep, a pit of this depth will require no tile drain and affords no home for rats.

WAGON JACK—Is fastened to joists over driveway and is automatic in operation throwing into neutral when wagon is lifted to proper height, also throwing out when the wagon is lowered.

operation throwing into neutral when wagon is lifted to proper height, also throwing out when the wagon is lowered.

HEAD—The cups are emptied by travelling for over 2 ft. upside down. The large sprockets are driven by a $1\frac{1}{2}$ in. shaft running in self-aligning bearings. The division floor between the upgoing and downgoing cups extends from this head shaft to the boot shaft.

No guides other than the sprockets are used to carry the cups and chains so that friction is reduced to the minimum.



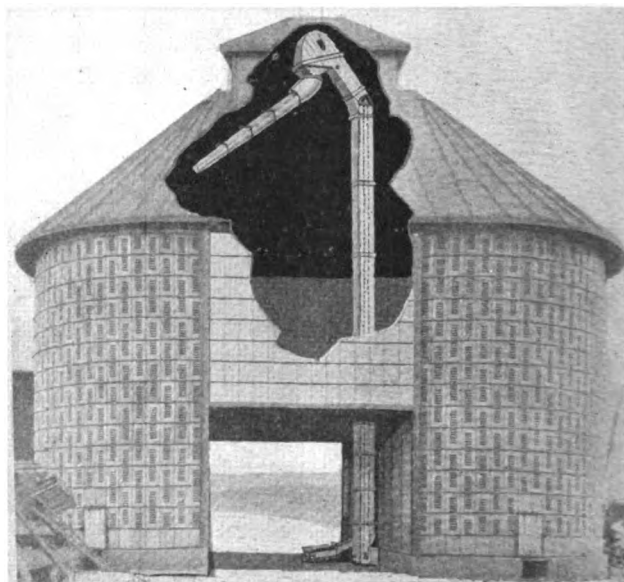
FREE CATALOG—A catalog and specification sheet will be

sent to anyone interested, and if specification sheet is returned properly filled out, an estimate of cost will be gladly forwarded with any additional information wanted.

THE MEADOWS MFG. CO.
BLOOMINGTON, ILLINOIS

building that houses thousands of bushels of corn and grain. Only one handling is necessary—that of loading it into the wagons that haul it from thresher or field to the granary. There the wagon is quickly unloaded by gravity and the grain taken to the cribs and bins. The spout shown in the cupola of the building is hinged so that it may be turned to either side, or to the bins in the center of the building. In saving of labor alone, not to mention the advantages of being able to quickly get the crop under cover, these elevators pay for themselves in a few seasons.

To the writer's mind, the greatest value of permanent and safe storage houses for grain on the farm is that they give the owners an opportunity to await



Crib Equipped with Elevator that Has a Tilting Dump that Is Not Set Into the Floor. The wagon is tilted by chains and pulley and the grain flows into the dump by gravity.

a favorable market before hauling it to the elevators. When such buildings are universally used, there will be a steady flow of farm products to market and no "gluts."

The U. S. Department of Agriculture has estimated that rats consume about \$200,000,000 worth of farm products a year. Of course, we all have experienced the sensation of finding an egg that some rat had eaten. But their principal food is grain, and their home for many, many years have been about the corn crib and granary. Grain at prices of several years ago was consumed by a rat in a year that was worth \$1 when marketed. One dollar is a pretty steep price to pay for the support of these disease-spreading rodents. Corn cribs and granaries that are absolutely impervious to rats earn dividends.

"It's not what you earn, it's what you save" is equally applicable to farms. "It's not what you grow, but what you get to market and get the cash for."

Disk Harrows Tested

By A. H. HOFFMAN

RECENTLY 533 fifty-foot draft tests on disk harrows were run by the Agricultural Engineering Division at University Farm, Davis, Calif. Several interesting results were obtained.

The main object was to find out whether increase of speed would cause increase of draft as was found to be the case with moldboard plows. The tests were run in three fields about one mile apart.

Great care was taken to avoid errors by making conditions for all tests as nearly alike as possible. For example, all tests in the same field were run on the same day or consecutive two days so that the soil moisture might not change greatly; the same harrow was used, interchanging sets of blades, that bearing friction might be the same and that setting levers to the same notches might give exactly the same angle for the gangs; the bearings were kept constantly well lubricated; the harrow was loaded so there was always the same total weight per foot of width to press the blades into the soil.

The results. The tests show that the draft of a disk harrow not only does not increase as speed increases, but that it actually decreases slightly. For speeds between 1 and 6 miles per hour the decrease is about $2\frac{1}{2}$ per cent. This means that the farmer is not penalized for high speed, but rewarded in that he saves both time and fuel.

Of still greater importance perhaps, are the comparative showings of draft for full and ordinary cutaway blades; the cutaway draft being 15.5 per cent greater, other things being the same. Cutaway blades were also found to be weaker than full blades of the same make, diameter and thickness.



FARMERS who started before there were agricultural colleges are taking the correspondence courses from the state colleges now, and so are "catching up" with their businesses.



THE first few hours of the lamb's life are the most critical; keep it from getting chilled.

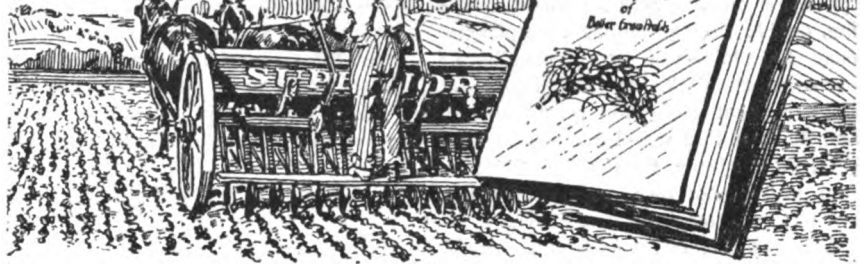


DON'T let leaf curl get your peaches. It's likely to unless you apply a fungicide while the trees are dormant.



THE purchase of one or two per cent of ammonia and potash in low analysis fertilizers to replace partly the loss of these plant-foods from the manure piled under the eaves of the barn in another instance of "Saving at the spigot and losing at the bung-hole."

The Book that Brings the Money



REAL GOLD! More money from your farm—this year. And this free book tells how to get it! Bigger grain harvests—and far better grain profits—invariably follow the use of

Superior Grain Drills

For Team or Any Tractor

The reason is that the Superior drill does—instantly and automatically—with *all* your grain, exactly what you would do if you were to plant each seed by hand. It makes a roomy trench. It deposits each seed at precisely the right depth. It spaces evenly—to the fraction of an inch. And then it carefully covers every seed—leaving miniature furrows to hold snow and moisture and to provide for harmless soil-expansion when the spring thaws come.

The whole story is well told in the booklet which is yours for the asking. Write today—or mail the coupon.

The American Seeding-Machine Co., Inc.
Springfield, Ohio

The American Seeding-Machine Co., Inc.
Springfield, Ohio

Please send me a free copy of your book, "Drilling for Gold."

Name.....

Address.....

What My Tractor Does for Me

Practically all the Field Work on 240 Acres is Accomplished Quickly and Cheaply on Iowa Farm

By MARCUS STANDT

I BOUGHT a tractor three years ago. I do practically all our field work on 240 acres, plowing, seeding, double discing, hauling corn pickers, etc. In addition I do practically all my own belt work. In those two years I have spent \$3.54 for repair service and \$1.50 of that was for labor. I take good care of my tractor and I figure that it does not owe me a cent today, but has paid for itself twice over.

For instance, last was a late spring. Wet weather held back seeding. My neighbors were in the field several days ahead of me trying to "mud in" their crops. I waited until our land was ready and then worked in long shifts from daylight until dark with my tractor. I did not have to waste half a day resting the tractor because the weather was hot, like my neighbors did with their horses. My tractor was just as efficient at the end of the day as it was in the morning.

As a result I had my land prepared when it was in the proper condition, my crops sowed, my corn land plowed and corn planted at least a week before many of my neighbors, who had to depend on horses. My crop was planted in a properly prepared seed bed and came on quicker, giving a better yield and matured well ahead of the frost line.

A couple of years ago sickness incapacitated my father for heavy work. Ordinarily this would have meant a hired man the year around. Thru the

use of my tractor I have eliminated the hired man, using only an occasional day's work at day labor rate. Figuring out in cold dollars and cents, I have saved the price of that tractor in wages which would have gone to a hired man.

There's another advantage which few people understand until they have

fishing. Then instead of being all fagged out I was ready to tackle the next job and put it over.

I am for power farming. I can raise better crops, raise them more quickly with less work than I was ever able to do with horses. I wouldn't go back to the slower methods under any condi-



Haying Has No Terrors on the Farm of Marcus Standt. The tractor and loader do the work.

become power farmers and that is the leisure time which the quicker work of power farming allows for other things. I do my farm work in fewer days than could be done with horses. Those extra days I spend in other necessary work or in improving my farm. Part of those days I spend in recreation. Get me straight on this—I spend them in recreation, not loafing. For instance, last spring while my neighbors were working in a frenzy to finish their corn planting, mine was all done and I went

tions, for with power farming I am practically independent of late seasons or the heat, flies, and hardness of the soil in summer. I am independent of the other fellow for all my belt operations. I run my farm. It no longer runs me.



Bad Business to Use Weevily Bean Seed

DON'T plant beans which have been infested with the bean weevil, is the advice of the New York State College of Agriculture, which points out that even if the beans have been cleaned of the living weevils by fumigation, the percentage of germination is likely to be low and the plants which do come up may be weak.

To destroy the weevils, the beans should be fumigated with carbon bisulphide in the fall. It is best to use a very tight box or barrel, tightly covered.

From one-half to one ounce of carbon bisulphide for each bushel of beans will be needed. The liquid should be placed in some shallow dish, such as a pie tin, on top of the beans. The cover should be put on and the fumigation be allowed to continue from 24 to 36 hours, with a temperature of 70 degrees F. The treatment cannot be relied upon at lower temperatures. Carbon bisulphide is very inflammable and should not be brought near a fire.



Mr. Standt and His Tractor Plowing Outfit.

Founts for the Poultry Pens

THE photo shows a water fount which has been used with success on a poultry farm in Nebraska. There are three poultry houses on the place, each being divided into pens. Each of these pens is provided with one of these founts.

The underground water line is tapped and a pipe brought up into each pen. The turn-off valve is located under ground, an extension rod bringing it within reach. Parallel to the water pipe runs the overflow pipe.

In each one is mounted a small platform carrying a large self-feeder, and



Water Fountain for the Poultry Pens. the fount itself, a fourteen-quart pail. This sets in a hole cut for it as shown.

Each pail has an overflow consisting of a pipe elbow connection soldered in place. This fits into the upper end of the drain pipe branch, tho the pail can be removed at any time for cleaning.

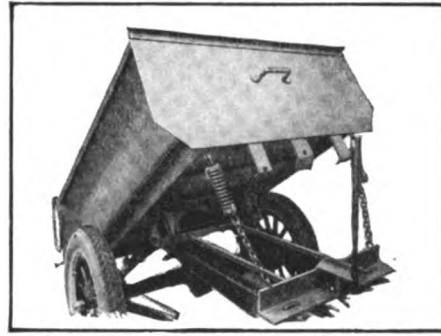
Two factors of advantage are obvious. The water is turned on slowly and the surplus flows into the overflow pipe and away. Thus the water is always fresh. A second advantage is that moving water will not freeze as quickly as water which is still, so the warm water coming from below ground keeps the founts free from ice, when it is so cold that a pan of it will freeze in a few minutes.

It was estimated that the cost of each of these, using new material thruout, was around \$3.50.—D. R. V. H.

✦
WHEN father plays ball with Bobby, he makes both of them happy.

✦
ATHIN strip of wood screwed under the pantry shelf makes a safe place for knife blades to be slipped, with only the handles protruding.

✦
CELERY can come out of the luxury class if all of the bunch is used. The green ends and leaves may be used to good advantage in soup.



Dumps Instantly

NO HOIST

JIFFY

All Steel

Dump Express Body

FOR FORD ONE TON TRUCKS

Advantages

- 1 Automatic Operation from Driver's Seat, Automatic tail gate.
- 2 Body dumps, spreads and returns with truck in motion.
- 3 Lowest overall height. No danger of upset.
- 4 Attached to chassis in 15 minutes.
- 5 Made in one piece of No. 10 Gauge Steel.
- 6 Guaranteed by 56 years of manufacturing experience.

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The Griscom-Russell Co.

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Only Rowell "Trojan" Ensilage Cutters Bear This Guarantee!

Rowell Trojan solid steel fly-wheels (cutter wheels) are guaranteed forever against breakage from any cause while in use! Hyatt Hi-duty Roller Bearings, ball thrust bearings, solid steel frames, safety automatic Pulley Release and Four-edged Tool Steel Cutter Bar are other features. Fifty-two years' experience in farm tool design behind it! Write for new special folder—no obligation!

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Makers of Quality Farm Implements Since 1870



WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

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Our Implement Inspector



HE finds much new and worth-while farm equipment offered to increase efficiency and cut down labor.

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Ford 3-Speed Transmission

A THREE-SPEED transmission for Ford cars and trucks which gives to the Ford the standard method of gear shifting, is shown in the drawing installed on a touring car. The transmission is a complete unit, ready to install and eliminates the Ford planetary. In connection with its operation, only two foot pedals are used. The left pedal operates the clutch and the right pedal the foot brake. A foot accelerator, a right hand emergency brake and gear shifting lever constitute a complete revision from the Ford to the conventional drive.

The device is a complete sliding gear transmission in itself, with three forward speeds and one reverse speed. The advantages claimed for this transmission are that in both low and reverse speeds the Ford has a great deal more power; on second speed which is half-way between high and low, the car has more flexibility, while in high speed the car is more powerful because of the elimination of the drag of the planetary bands.

The transmission is of the selective

type with the standard shift. The shafts are of Vanadium steel; the gears of nickel steel, the bearings are ball, while the lubrication is continuous in a heavy oil bath.

It is claimed that a Ford truck with the transmission installed will readily haul three tons. It is especially adaptable for use in sand, mud, on steep grades and for hard and consistent driving with heavy loads.

The transmission is mounted firmly to the universal joint flange at the rear of the planetary case and is supported by a cross frame member.

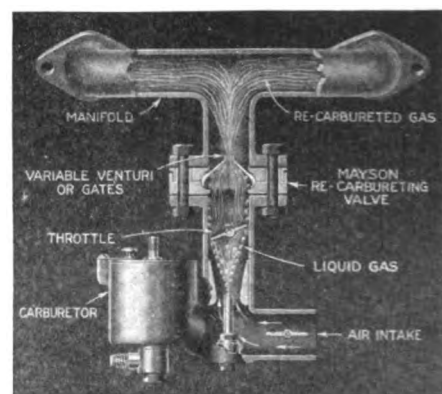


Burns All the Gas

SHOWN in the illustration is a scientifically constructed device controlling accurately the motor fuels for perfect combustion by improving the inlet-manifold and carburetion condition in general.

This valve is actuated by the difference in pressure within the inlet manifold, establishing an automatic constant velocity control and correcting all of the detrimental conditions by centralizing the gases in the manifold and reatomizing

the unvaporized gasoline at all motor speeds and loads by virtue of the automatic action of two gates which form a variable venturi, the carburetor throttle controlling the difference in pressure operating the valve.



Device that Insures Perfect Carburetion of the Motor Fuel.

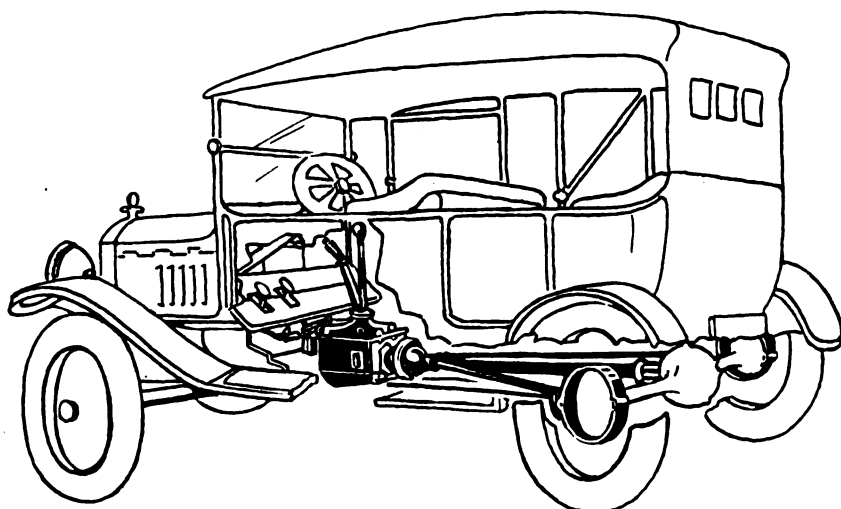
The vacuum in the manifold created by the motor exerts a pull upon the plungers of the valve.

The pressure of the plungers against the cams yieldingly urge the gates to close thereby forcing the fuel to mix with the fast moving air stream and to travel in a homogeneous condition into the cylinders of the motor.

To insure unrestricted valve action, a very small atmospheric bleed is admitted back of the plungers to break a dead vacuum that would retard the actions of the plungers.

At idling with closed carburetor throttle a high manifold vacuum exists which exerts a pull on the plungers, which in turn press against the cams forcing the gates into a closed position. The opening in the top of the gates allows sufficient fuel mixture to pass for idling.

As the carburetor throttle is gradually opened from an idling to a wide open position, a difference in pressure controlled by the carburetor throttle gradually forces the gates open against a less



Drawing Showing How the Ford Car Is Equipped with a Three-Speed Transmission.

sensing vacuum pull on the plungers, gradually increasing the capacity of the variable venturi (or the opening of the gates). At continued wide open throttle the vacuum slightly increases, exerting a pull on the plungers, causing the gates to come toward each other at a slight angle which deflects the gases into the center of the fast moving air stream and bringing the variable venturi into action for more complete fuel atomization.

Closing from a wide open carburetor throttle an increasing vacuum exerts a pull on the plungers thru a difference in pressure, forcing the gates to close in accordance to the carburetor throttle opening and the amount of vacuum created by the engine.

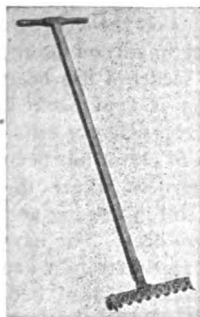
If the carburetor throttle is suddenly snapped open from an idling position, the valve allows the manifold vacuum to gradually decrease, lessening the vacuum pull on the plungers and the difference in pressure allows the gates to open gradually, admitting the full volume of fuel mixture, according to the motor demands.



Simplified Lawnmower

A GREATLY simplified and efficient lawnmower which, it is said, will cut and trim at the same time, both tall and short grass is shown in the illustration. It is silent in operation.

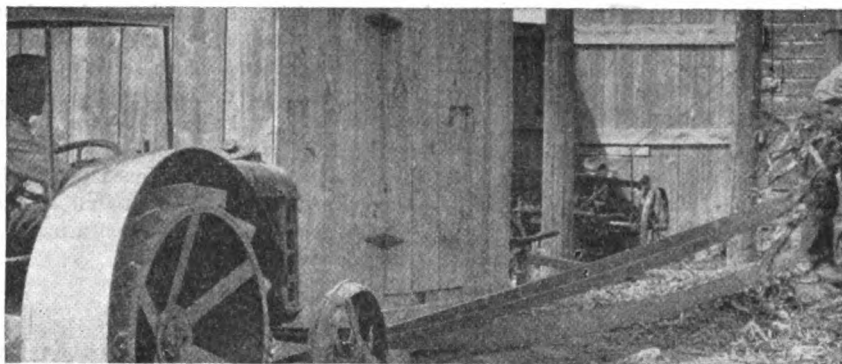
This new convenience is a great deal lighter in construction than the average lawnmower, weighing only seven pounds and due to the fact that there are no large wheels at the side, grass can be cut around trees, shrubbery, and along embankments much better than formerly, making hand cutting and trimming unnecessary.



New Type of Lawnmower.

The mower drives in much the same manner as the former styles, having a long "I" shaped handle, solidly set, but here the similarity ends. The cutters consist of 16 small, gear shaped wheels, but sharpened. Eight cutters on a side interlock and insure that the grass is cut evenly wherever the mower is guided. These cutters are adjustable so that grass may be cut to any height desired.

At the side are two small wheels, only two inches in diameter. These serve to guide the mower and take the place of the larger wheels now generally used. These wheels have gear toothed edges which serve to secure a hold for the mower in the dirt, whether it be damp



NOTE HOW LOOSELY IT RUNS



Copyright 1923, by The Goodyear Tire & Rubber Co., Inc.

The great value of the Goodyear Klingtite Belt, after all, is that it is designed and built with an understanding of farm-power duty. All its values have their real source in that fact

YOU can run a Goodyear Klingtite Belt loosely, getting all the benefit of easy action on your engine bearings, and still have the belt hold the pulleys. The Goodyear Klingtite Belt keeps a slipless friction grip on the pulleys, and delivers the full power steadily and smoothly. It needs no breaking-in; requires no belt dressing; works just the same in cold, rain or heat. Made in endless type for heavy duty, and in cut lengths for lighter drives. Sold by all Goodyear Mechanical Goods Service Stations and by many hardware dealers.

Goodyear Means Good Wear

GOODYEAR
BELTS • HOSE VALVES • PACKING

BUY Challenge Pipe Top Tanks



Why? Because there is no better steel tank manufactured and they are sold under a guarantee to give satisfaction and service. Made of the best grade of galvanized sheet steel, reinforced on top by a steel pipe which is rolled in and completely covered by the galvanized sheet, eliminating all chance for rust. Sides are corrugated at top and bottom to add strength. Go to your dealer and demand CHALLENGE tanks or send us specifications on size and style wanted and we will quote price.

CHALLENGE COMPANY, 188 River St., Batavia, Ill., U. S. A.
Kansas City, Mo. Omaha, Neb. Minneapolis, Minn.
Manufacturers of the famous Challenge Wind Mills, Engines, Grinders, Wood Saws, etc.

Phelps

Power and Light

Look anywhere—everywhere—you will find no plant so simple. None so easy to care for. Did you ever see the equal of these specifications:

No Switchboard
to continually adjust. New Phelps Controller is guaranteed to automatically start, run and stop the Phelps for the entire life of the plant.

No Carburetor
to daily tinker with. Phelps Vaporator burns all kinds of fuel economically.

Oversize Batteries
eliminate all battery worries; protected by our 5 year replacement guarantee.

2 Electric h. p.
to drive individual motors in house, outbuildings and at the well.

3½ Belted h. p.
to pull a line shaft loaded with a dozen chores.

75 Lamp Capacity
from the generator, without the aid of the batteries.

Does Every Chore
Pumps water, grinds feed, milks cows, churns, separates, washes, irons, sweeps—does every chore on your farm quicker, better, cheaper than you now do by hand.

Priced Right
Costs no more than plants that do less than half the work and give less than half the light.

2 Big Books
interesting, instructive free. Mail the coupon for your copies today whether you are thinking about buying right now or not.

TO DEALERS—We help you find prospects and close sales. Phelps dealers are successful. Send coupon below for dealer franchise facts TODAY.

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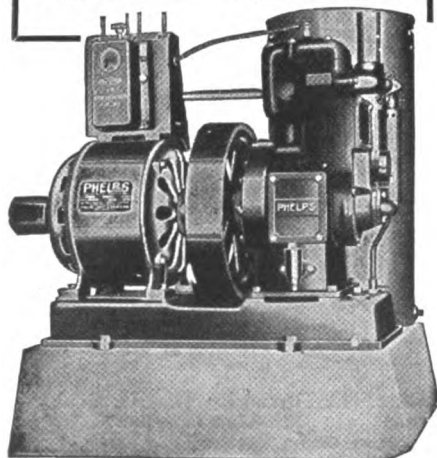
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WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

or not, and insure smooth running. Just in front of the wheels are two guards with pointed ends, which serve to guide the operator of the mower and insure that it will be held at just the right angle to get the best results.

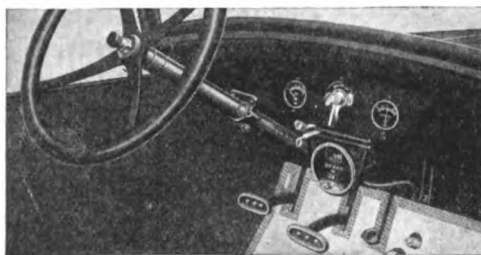
The cutters are so designed that each one may be replaced when dull and a whole set only costs a few cents, making sharpening unnecessary.



Speedometer for Star Auto

THIS speedometer, shown in the illustration, is of the magnetic type and fully jeweled and is driven from the propeller shaft in front of the universal joint on the Star Automobile. Such a method of installation, common to the highest priced automobiles, assures long and trouble-free operation, and eliminates the troubles generally encountered with the front wheel type of drive.

For mounting the speedometer on the Star instrument board, a special bracket is furnished which holds the instrument just below the spark and throttle levers. No holes need be cut in the dash, and



Speedometer in Place on a Star Automobile

the drive attachment is made without removing the universal joint.

This mounting makes for an attractively neat instrument board and an easily read speedometer, the figures of which are white against a black dial.

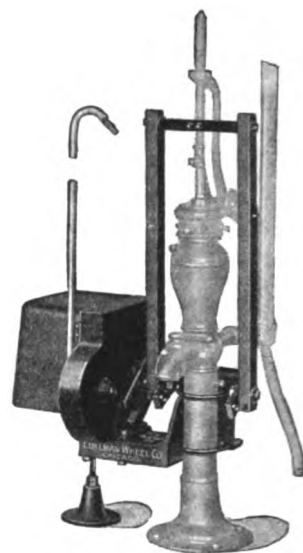


Electric Pump Jack

THE electric pump jack shown in the illustration includes such high-grade equipment as a standard Westinghouse motor, nickel steel pinions, hardened steel sprockets running in oil, chain drive, bronze bearings and a patented load equalizer of a new and distinctive design. The load equalizer automatically speeds up the return stroke and slows down the lifting stroke thus equalizing the load on the motor and greatly reduces the size of motor required by an ordinary pump jack.

The motors are obtainable for direct current or alternating currents and if desired an automatic control system can be furnished which will automatically start and stop the pump jack when the

water pressure falls below an established minimum. The standard pump



Pump Jack That Is Operated by a Small Electric Motor

jack has a push button switch for starting and stopping the pump.



Seed Bed for Alfalfa Clover

THE main requirements of a good seed bed for alfalfa, red and sweet clover, and other small seeded crops, are that it be moist, finely pulverized, compact, with a loose surface. Aside from moisture which depends on the weather, perhaps the most important point, especially if the seed bed has been plowed, is to get it firm packed. Often fields are seen where a satis-

factory stand of alfalfa or clover has been secured only in the corners where the horses had packed the soil in turning and the plow did not go in so deep. The harrow, roller or disk set fairly straight are good implements to pack the seed bed. and at the same time leave it loose and fine on the surface. Cornstalk land fairly free of weeds can be worked into a good seed bed by disking well, harrowing and seeding these crops alone or with a nurse crop where climatic conditions are favorable for this practice. Failure to get a stand and the consequent loss of money for high priced seed can often be avoided by careful seed bed preparation.



A FOLDING ironing board attached to the wall is always ready for use but not in the way.



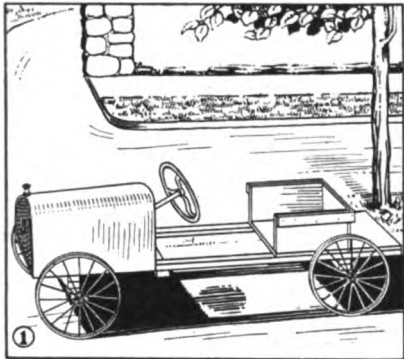
GIVE the sun a chance as a bleach for your clothes. Put the clothes in the sunlight when they are wet and keep them moist until they are of the desired whiteness.

SOMETHING FOR THE BOYS TO MAKE

A Racing Pushmobile

THE illustration shows a simple type of pushmobile easily and inexpensively built. You can add a windshield, fenders, running-boards, bumpers, lamps, horn, brake and such other accessories as you wish. In fact, if you want to spend lots of time on the work, you can turn out a model complete in detail.

You can borrow wheels from your coaster wagon, if you have one and cannot get other wheels. If you do, remove only the wheels, so they can be replaced



easily. Have a blacksmith thread the ends of a pair of rods for nuts, for axle rods. Baby-buggy, velocipede and tricycle wheels may be used, if you can secure two pairs that match up, or you can cut solid wooden wheels which will resemble steel disk wheels.

Figure 2 shows the chassis inverted. Side rails A should be 2x4's. Make the length to suit yourself. Connect them with 2x4 crosspieces B, about 16 inches from the ends, fastening these with a pair of bolts at each connection. The wheel axles are fastened to a pair of 2x4's of the same length as crosspieces B (C). Spike or bolt the rear piece to rear crosspiece B, and pivot the front one with a 5/8-inch carriage bolt, running this thru a hole bored thru the center, and thru the center of the front crosspiece B (Fig. 3). Place an iron washer over the bolt, to come between crosspieces B and C. Staple the wheel axle to crosspieces C.

Figure 4 shows the chassis with the hood framework in position. Build two forms the width of the chassis, with tops arched as shown in Figs. 5 and 6, and the boards fastened together with battens E and F. Nail the forms to rails A, and connect them with horizontal strips G, nailed to their edges.

Bore a 1-inch hole thru the inner form, for the steering-wheel shaft, and a hole in the edge of the front crosspiece B for a pocket to receive the end of the shaft (Fig. 7).



WATER

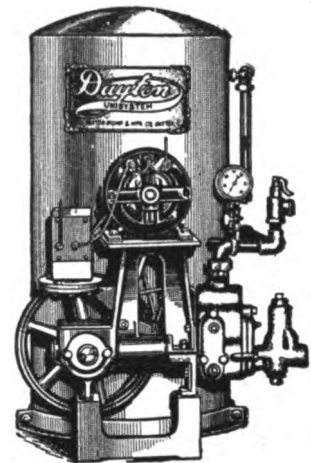
for the Home
for the Stock
for the Garden

Running water at the turn of a faucet reduces labor and promotes living comfort probably more than any other single thing in which the farm resident could invest. Water service the same as enjoyed in the city is the ultimate desire of every rural and suburban resident. When you are ready to make this investment it is well to remember that this modern improvement will be installed for a lifetime of service, every day in the year, and that it will be in use long after the first cost has been forgotten. We will send, free, upon request, a booklet which tells, briefly and clearly, the things you want to know before making this important investment. Write for it.

Ask for Booklet No. 500

The Dayton Pump & Manufacturing Co.
DAYTON, OHIO

Pacific Coast Branch
401-405 Fourth Street SAN FRANCISCO



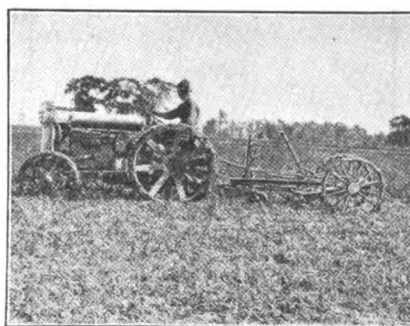
"DAYTON UNISYSTEM"
is a completely assembled water
supply system. No complicated
piping.

Because It Saves You Money

That is the real reason for buying any implement. It is especially the reason why any farmer with a tractor who raises hay should use the



When you can cut three acres of any kind of hay every hour with one man and a tractor, when no day is too hot to work the outfit ten hours, when you are sure you can cut the hay at the right time—it is real money in your pocket to own this mower.



Mowed 90 acres with Tractor Mower. We were utterly surprised at the manner in which this Mower handles the work. We averaged about three acres an hour and did the neatest job conceivable.
REECE BROS.
Dunlap, Tenn.

We find the machine 100% in efficiency. We operate it on the marsh where heretofore we have never been able to cut the hay with horses or oxen.
RAWLEY BROS.
Leipato, Del.

Specially built for tractor mowing, quick hitch, safety device, two speeds, roller bearings, operated entirely from the driver's seat, sturdy and reliable.

See what farmers say, then write us for prices.

Your dealer may have it.

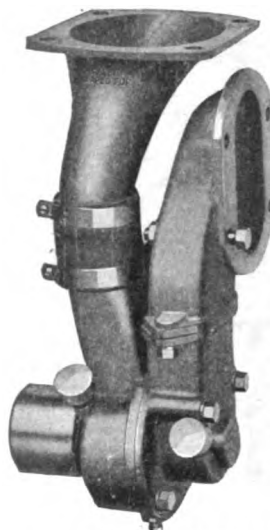
The Thomas
Manufacturing Company

Makers of Hay Machinery Since 1873

183 So. Limestone St. SPRINGFIELD, OHIO

**Save Time—and Money
by Equipping that
Fordson with a**

**MILWAUKEE
CIRCULATING WATER PUMP
FOR THE
FORDSON TRACTOR**

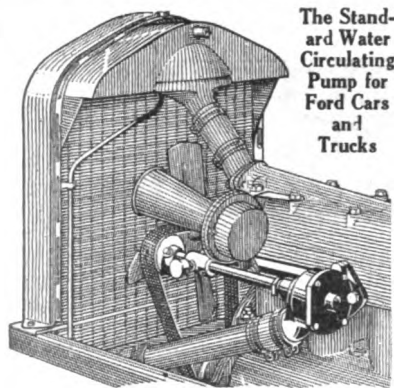


Prevents rapid evaporation of the water in the radiator because it forces the water through the system the moment the engine starts, keeping the motor just normally heated at all times regardless of the pull.

*Fits the
Fordson as
it Comes*

**MILWAUKEE
CIRCULATING WATER PUMP
FOR FORD CARS AND TRUCKS**

for Ford Cars and Trucks



The Standard Water Circulating Pump for Ford Cars and Trucks

Your Ford Deserves One

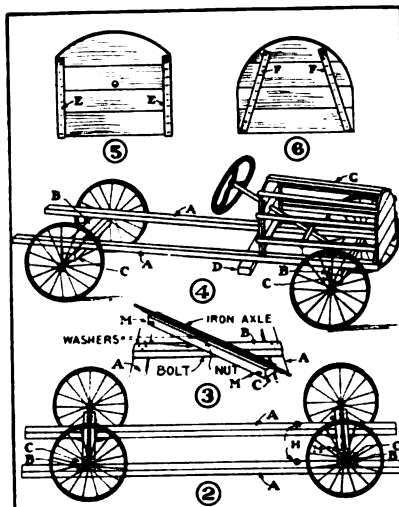
Buy them of your Jobber,
Dealer or Direct

For Fordson - **\$21.50**
For Ford Cars - **\$ 9.50**

Send for Descriptive
Literature

Cramer Mfg. Co.
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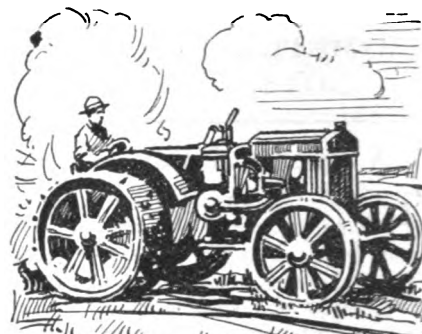
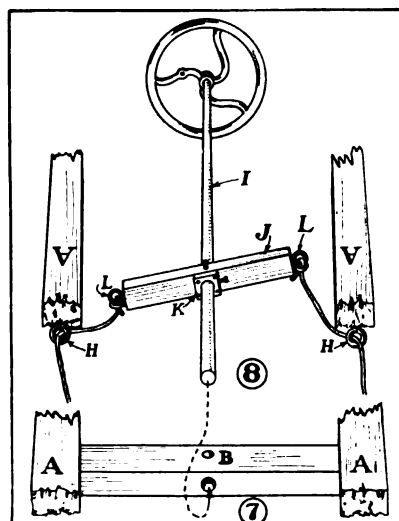
387-389 Tenth St., Milwaukee, Wis.



A sewing-machine wheel makes an excellent steering-wheel, but a wagon-wheel, or a solid wooden wheel can be used. Cut a broom-handle for the shaft (I, Fig. 8), and mount the wheel on one end. Then cut a crosspiece (J), and a square block (K), bore a hole of the diameter of the broom-handle thru the center of each, and nail K to J. Slip this crosspiece over the end of the shaft, and fasten it 12 inches above the lower end with screws driven thru the edges of J and K, as shown. Screw a screw-eye into each end of crosspiece I (L, Fig. 8), and one into the underside of each side rail A (H, Figs. 2 and 8); then tie ropes to screw-eyes L, run the ends thru screw-eyes H, and tie to screw-eyes M in axle E (Figs. 2, 3 and 8).

Figures 1 and 4 show how to complete the hood by covering the framework with sheet-metal, or first with cardboard then with canvas or other cloth. Finish the radiator front with a covering of screen wire. Build a front seat out of a box, a rear seat by fastening a board across rails A. Fasten crosspiece D across rails A for a footbar. When its construction is finished, give the pushmobile two coats of paint.

(Copyright, 1922, by A. Neely Hall.)



Tractor Efficiency

To get the most WORK out of your tractor you've got to have piston rings that won't leak.

No-Leak-O Piston Rings won't leak because they're sealed with oil.

The patented "oilSEALing" groove—found only in No-Leak-O—packs an oil film in between your piston and cylinder walls like "packing" in a pump.

This oil "packing" seals in all the expanding gas. Every drop must work.

The same "film" prevents oil from working up into your cylinder heads to form carbon and keeps "unburnt" gas and kerosene from seeping down into the crank case to weaken lubrication. No-Leak-O gives perfect oil control and compression in each individual ring. Every genuine No-Leak-O Piston Ring has the word "No-Leak-O" stamped in the ring.

Jobbers and Dealers: Write to-day for literature and liberal dealer proposition. Let us tell you how our National Advertising brings you business.

Owners: Write for interesting booklet, "The Piston Ring Problem and Its Solutions."

NO-LEAK-O PISTON RING CO.

Dept. F11

MUSKEGON, MICH. "

One price during eight years of continued success

One design—for all car—50c and up

READ THIS SIGN

Remember it—Look for it. It marks a Garage or Supply Store that is "live" and dependable. Even if your Garage Man doesn't display it, tell him you must have No-Leak-O Piston Rings for your next overhauling. Beware of imitations.



**NO-LEAK-O
PISTON RINGS**

Eight Hogs Gain 1,123 Pounds in 60 Days

MAKING eight pigs gain an average of $2\frac{2}{3}$ pounds each a day over a period of 60 days, a total gain of 1,123 pounds, is the record of Robert Ashcraft, a Meade County, Ky., farmer, who has just finished a demonstration which he put on in co-operation with County Agent B. B. McInteer and the extension division of the College of Agriculture to show farmers in his neighborhood the value of recommended practices in fattening hogs. Despite the fact that the feeding period ran for only two months, the eight porkers made their owner a net profit of \$28.04.

Mr. Ashcraft gave his pigs corn and tankage and the run of a white top and Japan clover pasture. During the 60 days of the feeding period, they ate 70 bushels of corn and 70 pounds of tankage, producing 16 pounds of pork for each bushel of corn and each pound of tankage that they used. Valuing corn at 70c a bushel and tankage at \$4 a 100 pounds, they put on pork at a cost of \$5.50 for each 100 pounds.

The fact that the pigs made good gains on the small amount of tankage is attributed to the Japan clover. The pigs also had reached the stage in their growth when the growing elements of a ration, supplied by tankage are not as necessary for cheap and rapid gains as they are for young pigs. They weighed 123.7 pounds each when the demonstration started and 264 pounds when it ended.

VARNISHED floors retain their luster better if no water is used on them.

MOUSE proof, bug proof and damp proof cotainers are the best kind for cereals and flour.

LARGE kitchens, haphazardly arranged, may give the housekeeper plenty of exercise, but that's all that can be said of them.

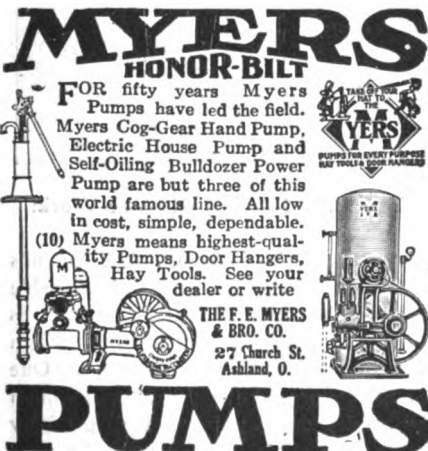
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HONOR-BILT

FOR fifty years Myers Pumps have led the field. Myers Cog-Gear Hand Pump, Electric House Pump and Self-Oiling Bulldozer Power Pump are but three of this world famous line. All low in cost, simple, dependable.

(10) Myers means highest-quality Pumps, Door Hangers, Hay Tools. See your dealer or write

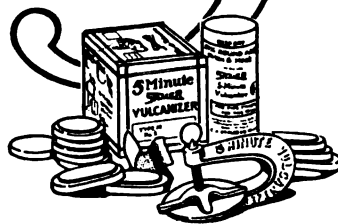
THE F. E. MYERS & BRO. CO.
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PUMPS



SHALER

5 MINUTE VULCANIZER



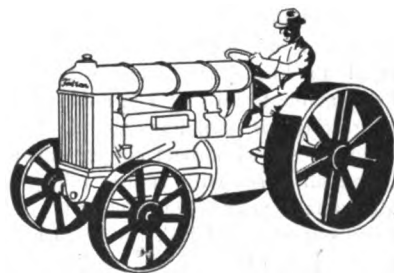
Repairs Punctures Good as New

Makes it easier to vulcanize than to stick on temporary patches. Just clamp on a Shaler Patch-&-Heat Unit and light the prepared fuel. The million and a half motorists who use this "friend in need" know that heat-vulcanized repairs do not loosen from the heat of driving.

Complete Outfit \$1.50—Buy It Anywhere

The Shaler is sold by all garages, auto supply, accessory and hardware stores everywhere. Extra Patch-&-Heat Units 75 cents a doz. (Prices are slightly higher in Canada and west of the Rockies).

C. A. SHALER COMPANY, 2269 Fourth Street, Waupun, Wis.



TOY FORDSON TRACTOR

Just Like Dad's

This practical toy delights children of all ages. Exact reproduction of the famous Fordson Tractor. Can be bought separately or hitched together with Toy Oliver Plow or Toy W. & K. Trailer. Made of durable cast iron. Tractor is $6\frac{1}{2}$ inches long. Can be had with or without lugs on rear wheels.

No toy box is complete without them. Sold by all progressive toy dealers.

Implement and Ford Dealers find these toys are a splendid means of making friends. We also produce the Toy Plow, Toy Truck Trailer, with rubber tires, Toy Ford Sedans, and Toy Ford Touring Cars. Write for prices.

Made by the originators of Toy Yellow Cab

ARCADE MANUFACTURING CO., FREEPORT, ILLINOIS



Our Readers Are Requested to Make Free Use of this Department for Questions and Answers on Modern Farming and Farm Improvements

Farm Mechanics Radio Set Costs \$50

Editor FARM MECHANICS:

I would like some information concerning the long distance Radio set recommended by Mr. Carr, which appeared in the last four issues of FARM MECHANICS. How much would a set like this approximately cost?—ROBERT CHRISTIAN, Thomasboro, Ill.

Answer—The set could be made as cheap as \$50 or probably a little above.—A. H. CARR.



Water Power

Editor FARM MECHANICS:

I have a flow of water that flows about two or more gallons per second. I would like to know the horse power that I could get from a 10-foot overshot wheel from that flow.—W. W. COOK, Mt. Olive, N. C.

Answer—A flow of two gallons of water per second would be 120 gallons per minute. Your horse power would be as follows:

$$\begin{array}{rcl} \text{Theoretically H. P.} & = & \\ 120 \times 8 \times 10 \times 1 & = & 9,600 \\ \hline 33,000 & = & 33,000 \end{array}$$

almost .3 horse power.

Your actual horse power would be

about 80 per cent of .3 to allow for friction losses in the water wheel and other machinery; or about .24 horse power.

This amount of power would furnish several lights direct or you could use a storage battery. The battery being stored during the day and after lights go off at night. This power would pump water. If you use storage battery I would suggest 32 volt system, as it requires only 16 cells while 110 volt system would take 55 cells, the latter being more expensive.—THE EDITOR.



Trouble With Radio

Editor FARM MECHANICS:

Am about to give and call my attempt a failure with radio. Have built a set from your magazine with unsatisfactory results. Can get most all the land or strong stations when I can reduce the noise low enough to hear them. Have tried to locate the trouble but have been unable to do so. The noise I get is a grating or grinding sound. Have lined my set with sheet copper and protected all wires with rubber tubing and all contact points are soldered. Have worn out one grid leak trying to reduce noise. I also might add that I have followed your advice to the letter. Can you help me locate my trouble?—W. H. TUNIS, JR., Smyrna, Del.

Answer—We would advise you to

look over all connections and contacts very thoroly.

Be sure the little springs that press against the four little prongs of each light press very firmly.

Scrape the lead posts on the storage battery clean and bright and the wire that connects to it also, as these become corroded by acid and sometimes make a noise like a steam hammer. (I just had this trouble myself and fixed it.)

Also see that all the little contacts in the jacks are pressing firmly.

I don't think the trouble could possibly be in the grid leak.—A. H. CARR.



Boy Agriculturists

Editor FARM MECHANICS:

Here are two pictures which show what the boys in the agricultural de-



The Tree Pruning Class at Work.

partment of the Wilson Public Schools are doing. I thought they would be suitable for reproduction in FARM MECHANICS as showing what the Agricultural High Schools are teaching farm boys. One of the pictures shows the class in animal husbandry doing judging work on dairy cattle; the other was taken of the class in orchard pruning.—F. T. MITCHELL,



The Boys at the Wilson (Ark.) Public School Scoring a Dairy Cow.

Agriculturalist, Wilson (Ark.) Public Schools.



Water Has 25-foot Drop

Editor FARM MECHANICS:

I am writing to ask for information regarding a water wheel to utilize a stream of water on my place. This has a volume of from 200 to 100 gallons per minute. I can bring the water to a point where I can secure a drop of 25 feet.

I will also want information about an electric generator and motor to utilize power at different points on my farm which consists of 215 acres.

As I am one of your subscribers, I trust you will favor me with this information.—F. E. BARNEY, Gilroy, Calif.

Answer—With a 200-gallon supply per minute of water working under 25-foot head, you can develop:

$$H. P. = \frac{200 \times 8 \times .8 \times 1}{33,000}$$

$$H. P. = .9 \text{—almost 1 H. P.}$$

In which:

200=gallons water available per minute

8=weight gallon water (approx.)

25=head in feet

.8=efficiency of water wheels

33,000=1 H. P. per minute

1=1 minute time

With 1,000 gallons of water:

$$H. P. = \frac{1,000 \times 8 \times 25 \times .8 \times 1}{33,000}$$

$$H. P. = 4.8$$

It will be advisable to employ 110-volt generator at the water wheel in order that standard equipment such as motors, lamps, etc., can be used. If a machine such as pump, churn, cream separator, feed grinder is to be used first find the speed at which machine is to operate, size of pulley, power requirements of driven machine, etc. Then employ any of standard motors.—THE EDITOR.



Three out of every four farm building fires are caused by Lightning. A flash of lightning may leave your buildings in ashes. No losses where Barnett Rods are used. Are you taking a 3 to 1 chance of losing your life, buildings and valuable contents? Why continue to run this risk? Barnett Lightning Rods are guaranteed to protect your life and property. They will eliminate your lightning risk. You owe yourself this protection now before it's too late. Tell us the number of unprotected buildings you have and receive free a copy of our Lightning booklet.

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in open territory. We teach you the business. Quick Sales. Ed. Petrie sold \$1975.00 worth of Barnett Rods in 24 days. Give references and present occupation. For Agency write us in care of Dept. H.

Jos. S. Barnett & Co., Cedar Rapids, Iowa

THE UPCO-LIGHT

FARM LIGHT AND POWER UNIT

is a standard time tested plant backed by operating efficiency records second to none.

UPCO-LIGHT

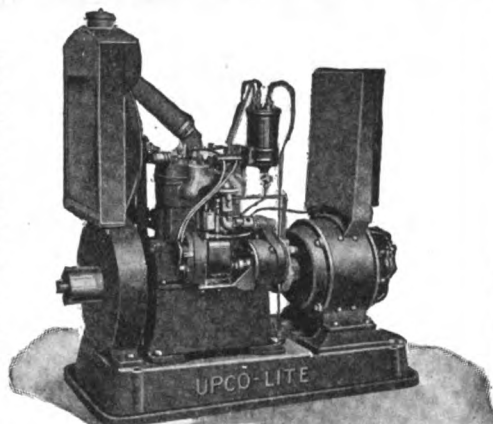
Plants are the definite results of more than 20 years' experience in the production of Unit Light and Power Plants of many purposes and embodies the latest operating and control features.

"A SIZE FOR EVERY NEED"

1-2½ and 3½ KW Plants in 32 volts. 2½-3½-5-7½-10-15 and 25 KW Plants in 110 volts.

UNIVERSAL PRODUCTS CO.
OSHKOSH, WIS.

Write, your territory may be open



SPECIFICATIONS: 2½ KW. Engine—2 Cyl., 3¼" x 4¼". Speed 1000 RPM. High Tension Magneto, Stewart Vacuum System. Generator 2½ KW. Voltage 32 or 110. Battery in sizes 90 to 215 AH.

**You
Might
Call
This
a Wheel**

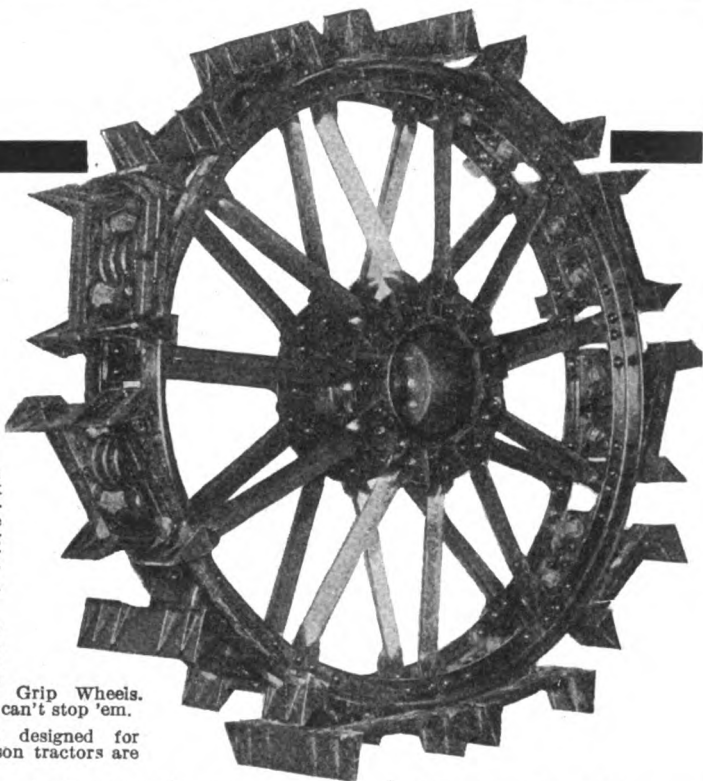
But it is more than that. It is track and wheel combined. It is the means of securing 35% more power and 35% greater efficiency from your tractor.

You'll never be put to a test that will stall your tractor equipped with Grid Iron Grip Wheels. Swamps hub deep can't stop 'em.

Complete wheels designed for Fordson and Samson tractors are carried in stock.

Grid Iron Grips can also be mounted on most wheel tractors. Write and tell us what tractor you use and we will quote you prices.

THE GRID IRON GRIP WHEEL CO., TOLEDO, OHIO





Helps for the Housewife

MECHANICS in the HOME



How to Bring Comfort and Cheer to Your Home

By MRS. DORIS W. McGRAY

IN the homes of America are born the citizens of America who go out into life with the stamp of these homes upon them. Only as these homes are what they should be, will the citizens be what they should be. Every home maker has in her power the molding of lives and ideals. Home is a place for rest, reading, play and a place to get acquainted with the rest of the family. It is a place for friendship, and for inspiration.

The music, and the art in the home will influence the tastes of growing children. These home surroundings should be as artistic, and as cheerful as possible.

Primarily, everything in the home is meant to be used. The rugs should be durable, the chairs comfortable, and the pictures enjoyable. Good light for reading, plenty of books, and magazines, and music are necessities. Home is a synonym for happiness.

When we look across the fields, the foreground is darkest, the middle distance lighter, and the sky still lightest,

or highest in value, as artists would say. The browns and greens predominate, in dull shades. There are little splashes of color in the flowers. These very brightest colors are used by Mother Nature very sparingly.

Likewise, in home decoration, the floor is darkest. A light colored floor refuses to stay down, but "jumps up at you" the minute you enter the room. The walls are the middle distance, and are lighter, with the ceiling still lighter. A heavily beamed ceiling violates this principle of design, and seems to come down to meet you, making the ceiling appear much lower. The floors, walls and ceiling serve as background for the furniture and various objects in the room, therefore should be kept subdued, in grayed color the bright splashes being reserved for small objects which give accent to the whole composition, just as the flowers in the landscape.

For rugs, choose those which are of blended all-over design, in harmonious colors, with contrasts not too strong. They should be dark enough not to soil easily. Small figures do not show dirt so quickly as plain colors, and are more pleasing. Select a rug which will stay

down, not one which will come up to meet you. It is distinctly unpleasant to walk upon huge red roses or gaudy figures. Linoleum rugs are very practical for dining room and kitchen, being sanitary. In my mother's home, the parlor is carpeted with a rug of bright reds, greens and browns, in very striking figures. The back sitting room is much more pleasing to the artist's eye, since the floor is covered with rag carpet, in soft blending colors.

The walls are background, not the center of interest in a room, hence should be treated in grayed colors. Tans, greens, blues may be grayed so as to be charming. A tan or yellowish color gives sunshine to the room, while greens and blues are best in south rooms. Light colors make the room appear larger and lighter. Walls are likely to be papered in too dark colors. Lilacs climbing over a trellis, bits of landscape with trees and brooks, and huge geometrical figures are disconcerting to a sick person. Many a time have I counted the figures in such a room. The figures should be kept small and indistinct.

Plenty of windows mean light and fresh air. If the view is good from the window, side drapes are sufficient. If a class curtain is used, it may be of thin marquisette, scrim, net, or cheesecloth. The side drapes should not be so heavy as to shut out much light. They are for the purpose of furnishing an easy transition from the walls to the curtains. They are between the two in darkness, or value, and harmonizing in color. Dead white has no place in decoration, but should be softened, making the curtains ecru.

The wood trim should be nearly the same value as the walls. Light brown walls and light brown woodwork harmonize. It should sink into the background, rather than stand out from it.

With the floors, walls, and ceiling as background, we choose the furniture. It may introduce more color, yet not too vivid. It should be simple, and well proportioned. The bright touch of color in the room may be in a lamp shade, a piece of pottery, pillows, or the side drapes. A picture may be the bright note in a room, the color scheme of this picture being carried out in the furnish-



A Cheerful Living Room in the Farm Home Means a Happier Family.

ings. Japanese prints are excellent for supplying beautiful color schemes. For those who do not understand color, these are very fine. Remember, always, to keep this emphasis of bright color in only a small amount.

Following out our picture taken from Nature, we can plan the home decoration so that it is satisfying, and harmonious.



Mothers Lose in Cooking Contest

THE flapper type of girl has been so much in the public eye of late that she has obscured vision of that great host of fine young women who have no inclinations in that direction, says the Rock Island, Ill., Argus. For every flapper there are a thousand fine, wholesome, womanly and home-loving girls who are equipping themselves to make the future homes of Illinois better in every way; the girls whom the substantial young Illinoisians will feel honored to claim as helpmeets and home mates, while the flapper passes on into the sere and yellow leaf, unclaimed, unwanted, and unable to turn back the tide of years with rouge box and lip-stick. So much prominence has been given the spectacular variety that it is a real relief to hear something about those who have been rather shoved into the background by the more flamboyant type.

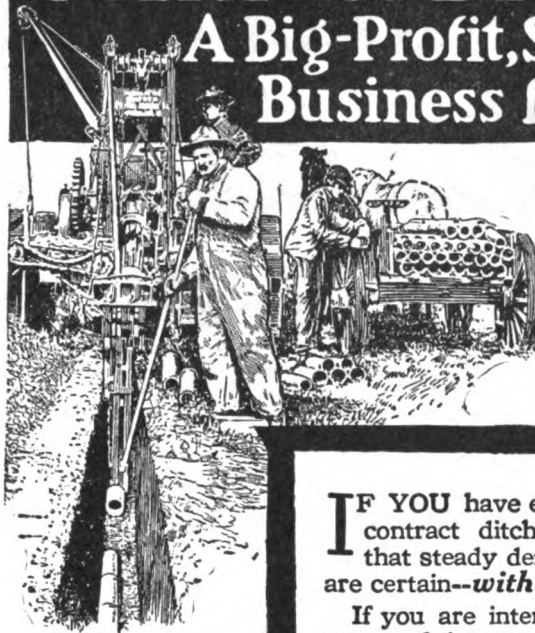
Recently a contest in cooking was held between the domestic science class of a county high school and the best cooks in the Parent-Teachers' Association of that institution. The mothers cooked and served a dinner one day, inviting the county officials to be present at the inauguration of a fine new electric range installed in the school. The meal was in four courses, and the officials enjoyed it heartily, saying it was the best meal they had eaten in a long time.

The next day the same officials were invited back for the meal the girls cooked. It was the same—four courses and the same viands—but after eating it the officials unanimously voted that the girls had beaten their mothers' cooking. As one of the officials said, "It looked different and it tasted different and it was different—it was a whole lot better."

Coming down to the finances of the affair, the girls produced cold figures to show that not only had they outcooked and outserved their mothers, but had produced a meal at a cost of 16¢ a plate, while their mothers figured out their cost at 27½¢ per plate. It may be said that there are no flappers at the school, but a lot of fine, healthy, modern and wide-awake young women who seem to have taken the honors in domestic science and run clear off the reservation with them.

Contract Ditching

A Big-Profit, Spare-Time Business for Farmers



Ed. Uvaas Made \$1900 in 84 Days' Work

I purchased one of your No. 1 tile ditching machines in April, 1915, and the gross earnings from 84 days' operation were \$2200. I paid out for help and supplies \$287.00, and my repair bills amounted to \$20. This netted me \$1902.00. My crew consisted of one man beside myself. I had never done contract tiling before getting your machine and my farm work took up considerable of my time.

ED. UVAAS, Larsen, Wisconsin

\$71.00 in one day

On one job I cut 117 rods of ditch, averaging 42 inches deep, made four connections and two curves in one actual day's work, for which I received \$71. I passed the 41 mile mark of ditching with my machine on this job, and the machine is in A-1 condition. This, in a little over three years, and I have not run the machine one half the time, having other work to attend to.

R. W. SHERRARD, \$6,350 from one Season's Ditching for J. E. Griffith

I own and operate a No. 1 Contractor's Buckeye Ditcher and as an investment it cannot be beat. I recommend it to any one going into the business.

I have dug 268 rods in 10 hours, and I dug 18,370 rods earning \$6,350 during the 1918 season. During that time I was often held up by lack of tile, and harvest. I average 175 rods per day.

J. E. GRIFFITH,

IF YOU have ever looked into the contract ditching field, you know that steady demand and big profits are certain—with the right ditcher.

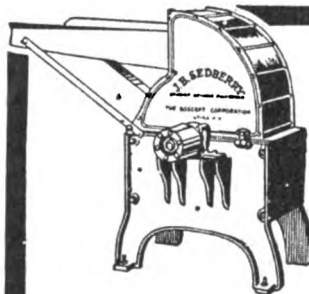
If you are interested in getting the cream of the contracts in your vicinity, get in touch with us immediately. Whether you are an experienced contractor or just thinking of getting into the work, on either a full-time or part-time basis, get the facts regarding the

"A Perfect Trench at One Cut"
BUCKEYE
Traction Ditcher

This machine is the undisputed leader under all conditions of soil and climate. It furnishes its own power. It cuts through hardpan and frost. It operates well in swampy land. It gives you **100 to 150 rods of ditch each day**—every foot clean, smooth, true to grade and ready for tile or pipe.

Drop us a line today. Let us show you how others have become independent through this work—how you can do the same, right in your locality.

The Buckeye Traction Ditcher Co. (7)
537 Crystal Ave., Findlay, Ohio



Make Your Tractor Earn Its Keep

Profits from your tractor depend mostly on your belt work. Hooked up to a "JAY BEE" Mill it pays big dividends. By grinding for yourself you cut your feed bill 20%—by grinding for your neighbors you make a profit of from \$15. to \$20. a day.

No other grinding process can equal the "JAY BEE" for fine grinding or for low up-keep expense.

"JAY BEE"

No Burrs — No Gears — NO TROUBLE
WRITE TODAY!

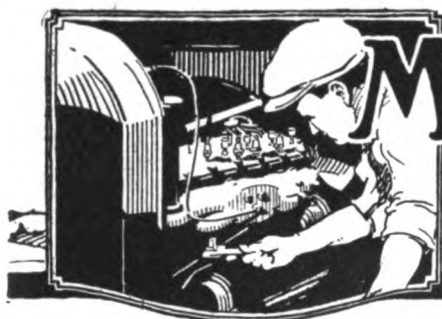
For descriptive catalog showing why the "JAY BEE" grinds finer and faster with less power.

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430 West Ave.
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Motor Trouble Advice

By F.M. Service



Overhauling an Overland

To the Expert:

We wish to overhaul our Overland Model 79 car and wish to have a few pointers.

There was a dull tap which could only be heard when the engine was very warm or pulling hard.

The car is equipped with Gray & Davis starting and lighting system, connected to motor with chain. When we step on starter button sometimes it gives a grinding noise.

Also give us a few pointers on valve setting and grinding, also timing.

Can you tell us what the numbers and letters indicate on the flywheel?—L. C. STETTNER, Morris, Minn.

Answer—The hard dull knock you heard was probably carbon. This is heard as a very metallic knock and is due to the accumulation of carbon in the cylinders, exploding the charge and causing preignition. Ordinarily a loose bearing or loose piston will not be heard under a pull, tho if the main bearings were very loose you might have a dull knock when picking up.

The noise you sometimes hear when starting the car is due to the chain jumping the starting motor gear. If the chain has been in use for some time it has worn so badly as to fit very loosely and when subjected to a hard pull will ride over the sprocket teeth. You had best replace it with a new one.

If the gears on the camshaft have not been changed, the valves cannot be out of time and you had best leave them alone, as it is very hard to explain how to correctly time a motor, unless the one doing the job has had considerable experience. The marks you speak of on the flywheel are put there to show how the camshaft gears are to be placed so that the valves will open and close at their proper points in the piston travel. As for instance, E. O. means "exhaust open" and I. C. means "intake closed," etc., and the numbers 1-4 and 2-3 denote the cylinder numbers, with numbers 1 starting at the radiator and counting back 1, 2, 3, 4 to the dash. As an example, when the marks on the flywheel 1-4 and E. O. are exactly at the indicating arrow on the top of the clutch

Mr. Service will answer free of charge for Farm Mechanics readers questions of general interest on Automotive troubles. As a "trouble shooter" he is probably the best equipped man in the industry, having diagnosed the ailments of thousands of automobiles, trucks and tractors. Put your troubles up to F. M. Service—Editor.

housing then number 1 cylinder exhaust valve should just be open to its highest point, and on the next revolution of the flywheel cylinder No. 4 exhaust valve should be open at its highest point.—F. M. SERVICE.



Air Washing Floats Leaks

To the Expert:

I am a reader of FARM MECHANICS and always read the motor trouble advice.

We are having trouble with our Fordson tractor and would appreciate it very much if you could tell me the remedy for this trouble. The motor is very hard to start and when it does start it will not run unless the choke rod is pulled clear out, thus shutting off the air. If choke rod is pushed in the slightest distance the engine will stop dead, just as tho the ignition was suddenly cut off. And when the motor does run it has hardly enough power to pull its own weight on the smooth road. I have tried both gasoline and kerosene for fuel, but with no different results. I removed all carbon and reground the valves. The intake and exhaust manifold gaskets are all tight, and do not leak. Has good compression and is not bad about pumping oil. I have tried all possible adjustments of the carburetor needle valve, but with no different results. I have drained the fuel tank, cleaned sediment bulb, and strainer, also the entire fuel pipe. Have inspected and cleaned the carburetor, but found no dirt nor loose valve seats. Vaporizer coil is not burned out, because I have tested this with air pressure under water.

Motor does not respond to the throttle lever to any great extent, altho the butterfly valve opens natural. It doesn't seem

to make any difference whether the air washer has any water in it or not, but I always keep it filled. I do not think there is any sand holes in the intake manifold, because the motor ran all right from the time we bought it new in September until just about a month ago, when this trouble began.

The magneto is not weak, because the engine runs just as good on the magneto as it does on a new six volt battery. I cleaned the spark plugs and adjusted them with a gauge, also cleaned timer and magneto contact plug; all wires and coil vibrators are O. K. At times engine will run with choke rod pushed in very slightly and at other times it must be clear out with valve entirely shut.

There appears to be enough gasoline at needle valve, because when needle valve drain plug is removed gasoline runs freely.

Will you kindly give me your opinion of this trouble as soon as possible, as I need my tractor to use?—GUY E. STEVENS, Middlebury Center, Pa.

Answer—You certainly have checked over your tractor thoroly to locate your trouble, which you will find is caused by a leak in your air washer float. This allows the float to remain at the bottom of the chamber, whether or not there is water in it and thus cuts off the air supply, making it necessary to keep the choke out, and the little air obtained comes up thru the primary air tube.

You will find that it will be cheaper in the long run to replace this float with a new one, as they can not be repaired satisfactorily.—F. M. SERVICE.



Chevrolet Cylinders Scored

To the Expert:

I would like your advice in regard to my Chevrolet 490. It has been acting badly for about four months and I have had several mechanics working on it but could not locate the trouble. I have just about decided it must be the valves, as I cannot keep them in good shape, altho I have had them reground and reseated.

Owing to car not working right and getting caught in blizzard it got so hot that all cylinders were slightly scored.

The mechanic said they were not scored badly enough to affect running of car, but I have trouble with one cylinder continually fouling the plug. I would like to know if it would be advisable to have them rebored or to lap out score marks. In lapping in what would be the correct way, and would I have to fit new pistons and rings? The car has only been driven 3,500 miles and compression is fairly good.—R. A. CARR, Salt Creek, Wyo.

Answer—The chances are that the time your motor was overheated all the life was taken out of the piston rings, and we would recommend that you have the pistons taken out and new rings installed.

If the score marks are at all bad it would be best to replace the pistons also. To lap out the mark you must purchase the next size of pistons to standard. This would possibly be .0025 of an inch larger than the ones now in your motor and you will just about be able to start them in the cylinders. To lap them into a fit use a mixture of oil and fine valve grinding paste. Spread this liberally on the surface of the piston and start working it in the cylinder with both an up and down and a revolving motion. When the piston can be worked all the way thru the cylinder easily it is done and can be fitted with rings and installed.

In fitting the rings be sure and try each one in the cylinder it is to go into and see that there is a gap between the ends of the ring of at least .050 to .010 of an inch or the thickness of a calling card.—F. M. SERVICE.

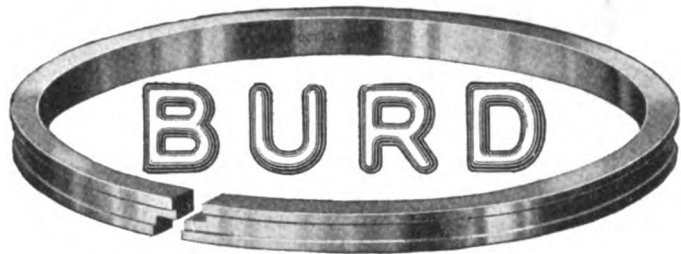


Oil Pressure Gauge

To the Expert:

We have a Moline Universal Model D tractor. The oil pressure gauge fails to work at times. It does not show the pump throwing a pound of oil, and if you open the test pet cock there will be a drop or so come out and then quit. But when you take out the pressure plug the oil comes out there as it should. I have taken off the lines on the outside of the motor to see if they were stopped up, but they were all right. The gauge acts as if the pump was throwing or pulling air, but I do not think that is the trouble. I also have plenty of oil in the crankcase at all times.—DAVID B. CULTICE, Muncie, Ind.

Answer—Your oil pump is doubtlessly working or you would have burned out the bearings in your motor before this. The gauge is probably broken, tho before you replace it, try disconnecting the line leading to it at the point nearest the motor. A free run of oil should



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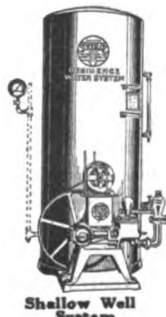
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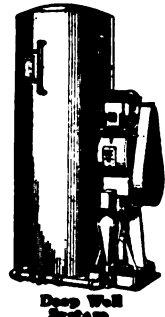
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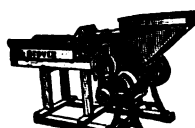
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WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

be had, if the pump is all right, and oil line clear. If not the trouble must be traced down and eliminated or considerable damage will be done if the oil level is ever allowed to become low.

One of the first places to look is at the strainer on the intake end of the pump. If this were clogged up the pressure gauge would act very much as your describe. Next remove the pump housing and inspect for a stuck or open valveball. Inspect all points in pump and line for air leaks.—F. M. SERVICE.



Fuel for Fordson

To the Expert:

I am a reader of FARM MECHANICS and I think it is wonderful. I have a few things that I want to ask you, on which you might give me some help.

I have a Fordson tractor. Do you think it hurts a motor to use kerosene more than using half and half, or pure gasoline? Which is the cheapest in the long run?

Do you think that a Fordson tractor would pull two 14-inch plows about as easy as two 12-inch?—EMERY BRANDT, Bradford, Ohio.

Answer—The Fordson is designed to operate most efficiently on straight kerosene and if the carburetor and vapor tube are properly adjusted, it will give much more power on kerosene than on gasoline or any mixture of the two. This being the case, it follows that it is the most economical.

It would depend entirely on the plowing conditions as to the 14-inch plows being pulled as easy as 12-inch. Certainly in hard soil they would not work as easy; in fact, it is a question if the tractor could handle them. While in soft sandy soil they could probably be used with success.—F. M. SERVICE.



Fordson Fouls Plugs

To the Expert:

I am a reader of FARM MECHANICS and like it very much; would not think of doing without it. My Fordson tractor fouls the spark plugs. It has been in use about one year and I never had a bit of trouble with it until this winter. It began fouling plugs all at once. I drained the oil out and put in new oil, cleaned the carbon out, and resealed the valves, put in a new set of spark plugs, but still have the same trouble.

It won't run at all unless the choke is pulled half way out. I cleaned the mixing chamber and vapor tube. Do you think it would need new rings considering how much it has been run? If so, what kind of rings would you advise?

I would like to know if a Fordson

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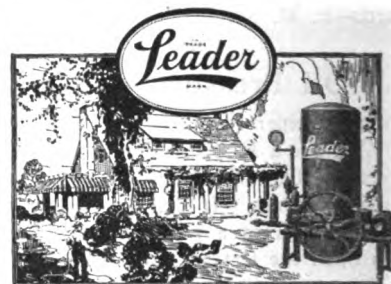
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WHEN WRITING ADVERTISERS PLEASE MENTION FARM MECHANICS

tractor will run a saw mill satisfactorily and what size saw would you recommend.—H. M. OFFUTT, Augusta, W. Va.

Answer—If your tractor has been in operation a year the chances are that it needs new rings. The regular Fordson rings have a slight taper to their side. This taper stops the tendency to pump oil by the ring sliding over the oil on the up stroke and taking the excessive oil back with it on the down stroke. After a certain length of time this taper will wear entirely flat and it is best then to replace the rings. We would recommend that if you do this you use the regular Fordson ring. In fitting them to the pistons, be sure that the edge which is stamped with the word "Ford" is placed up in the ring groove, for this edge is the small end of the taper. Try each ring in the cylinder it is to go in and be sure that there is a gap of about .010 of an inch between the ends of the ring to allow for heat expansion when in the cylinder.

While your motor no doubt can stand a new set of rings, it would not seem that the trouble you are having is due to this. We would suggest that you replace the vapor tube with a new one, as you must have a leak in it or the connections, which would account for the necessity of running with the choke lever out.

A Fordson will operate a saw mill with great success, and will handle a 36-inch saw without difficulty.—F. M. SERVICE.



Radiator Stopped up

To the Expert:

The radiator on my Overland car is plugged. I have boiled it out with lye water and also with a strong solution of soda, but neither one seems to do any good. It is a honeycomb radiator with a syphon cooling system. Wish you would advise me thru the FARM MECHANICS how to clean out this radiator so the water will circulate.—WILLIAM KRUSE, Continental, Ohio.

Answer—If boiling for several hours in a soda or lye solution did not clean out the circulating spaces, there is only one thing to do. Remove the top and bottom tanks from the core and after cleaning out all the sediment that can be loosened with a fine wire, boil the core again in the lye solution which will remove the balance.

Unless you are very handy with a soldering iron and blow torch you had better not attempt the removal of the tanks as it requires considerable skill to take them off so they can be used again.—F. M. SERVICE.

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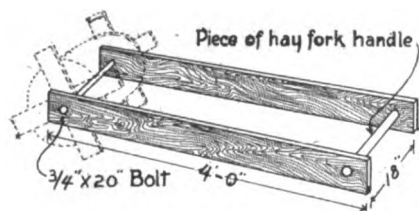
Connersville, Indiana.

HANDY ANDY'S DEPARTMENT

WHERE FARM MECHANICS READERS CAN PASS ALONG GOOD, TESTED IDEAS.

Frame for Fence Spool

UNROLLING fence is a rather difficult job, so I devised the frame shown in the illustration for this purpose. It is made of two boards 4 inches



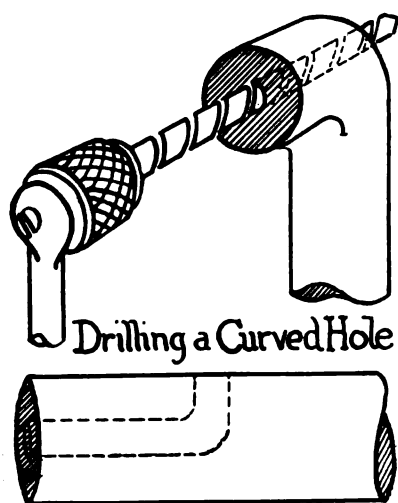
Frame for the Fence Wire Spool.

wide and 1 inch thick and 4 feet long. Thru two holes at one end I put an old pitch fork handle and nailed it fast. Thru holes at the other end I ran an iron rod, with bolts at either end outside the boards. This rod was run thru the spool of wire and the bolts turned up. By taking hold of the handle I found it is not at all hard work to drag the fence along, unrolling it at the same time.—LORNE B. HALE, Keldron, S. D.



Drilling a Curved Hole

IT is sometimes necessary to replace a piece of farm machinery pierced thru with a curved hole, and how to drill or have drilled the curved hole will puzzle a great many farmers and the average mechanic. It can be done, however, rather easily once you know how, by



Showing How a Curved Hole Is Bored.

\$1 for an Idea

I, Handy Andy, am famous, because I am found on nearly every farm. When some little thing that would make farm work easier pops into my head I get to work and build it. Farm Mechanics has asked me to pass my ideas along, so as to help everyone do things more easily. I want to pass your ideas along, too. Send them to me, using not more than 200 words, and a pencil sketch or photograph to illustrate it. I will send you \$1 for every idea accepted. Address your letter to me.

HANDY ANDY,
Care Farm Mechanics,
1827 Prairie Ave., Chicago.

either straightening the part if it be curved and then drilling the hole with an ordinary twist drill; after which the part is reheated and rebent to its former shape. Or if a straight part with the hole entering one end and coming out the side, by bending and drilling and then reheating and straightening again. The accompanying sketch helps explain the process more clearly.

Sometimes a piece of farm machinery having in it perhaps a curved oil hole needs immediate replacements and the part must be made, it is then knowing how to drill a curved hole frequently prove valuable.—ED. HENRY.



A Simple Plumb and Level

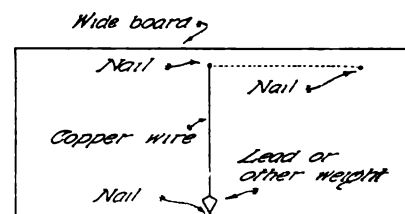
THIS plumb or level can be made in a few minutes and will do accurate work. No one need hold up work of a constructional nature because of a lack of level.

Prepare a wide board with one edge straight and true. Midway between the ends and near the other edge, drive a small nail and fasten to it a small copper wire, free from its coating.

Cut a slug of lead and whittle this down into a form somewhat resembling a top, with the lower end pointed and the sides symmetrical. Cut a small notch in the upper end with a hack saw or

chisel, and after knotting the free end of the wire, place this knot in the cut just made and close again with a pair of pliers.

With the square, run a pencil line from the straight edge to the nail, which



A Simple Plumb and Level

How to Make a Plumb and Level.

is exactly perpendicular to the straight edge.

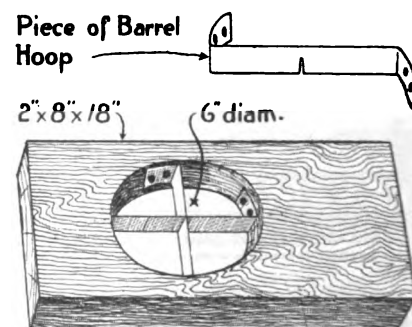
When the board is set upon work to be tested, the position of the copper wire will be parallel to the pencil line if the work is level. It might be well to drive a small nail at the point where the lower end of the weight will hang.

By running another line from the upper nail, toward one end of the board, exactly parallel to the lower edge, this will act as the guide line when it is to be used for a plumb.—D. R. V. H.



Seed Potato Cutter

CUTTING seed potatoes with a knife means sore hands and lame fingers. Here is a seed potato cutter that I have used and have found that it does the work; altho it is a simple device, as will be seen by the illustration. Take a piece of 2 by 8-inch board, about 18 inches long, and cut a hole 6 inches in diameter in it. In this hole place two



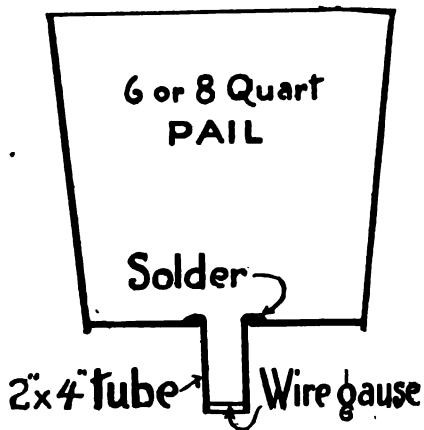
Simple Cutter for Seed Potatoes.

knives, crosswise, setting the ends of each one into slots cut at the edges of the hole. These knives may be made of a piece of barrel hoop sharpened on a grinder. Each one is cut half way thru at the center so that they will fit together and form an even surface at the top. In cutting the potatoes it is best to wear leather gloves, so as to prevent slight cuts to the hand. A potato pressed down on the knives will be cut into four parts, the parts falling into a box or basket below.—CARL FRIDRICKSON, Athelstane, Wis.



Pail Funnel for Tractor

ANYONE who has put fuel and oil in a tractor or filled the radiator with water will realize how handy the pail funnel shown in the illustration will be. A six or eight-quart pail is used.



Funnel Made from a Pail for Filling the Tractor.

To a hole cut in the bottom as near the center as possible, a short tube about 2 inches in diameter is soldered. When the tube is inserted in the tank opening, the pail rests on the tank. This forms a solid support to the fuel oil can, and takes away the arm-straining work of holding it, usually in a high awkward position.—JESSE H. CLARK, JR.



Six-Horse Hitch

THE sketch shows a method of hitching a six-horse team to a gang plow so that none of the horses have to walk on plowed ground. First take a 2 by 4-inch plank, 3 feet long, and drill a hole on either end one inch from the end. Put a four-horse evener on one end, as shown in the illustration, and at the other end fasten a lead bar, on the end of which is a double tree. The lead bar runs between the two horses next to the furrow. The manner in which the hitch is fastened to the tractor makes a balance by which the four horses have to pull twice as much as the team. Farmers will find that this



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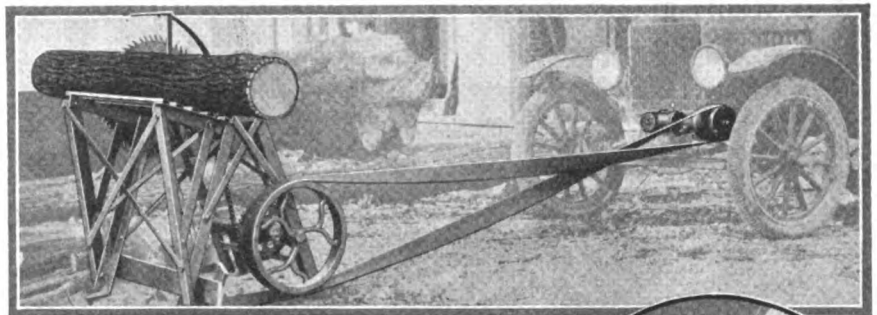
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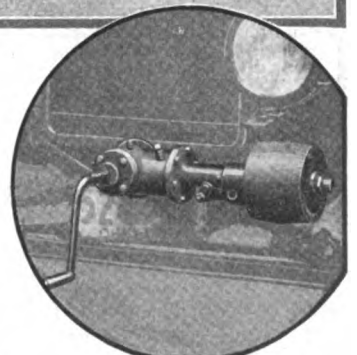
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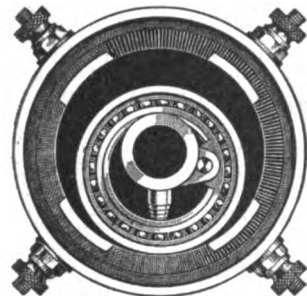


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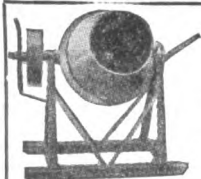
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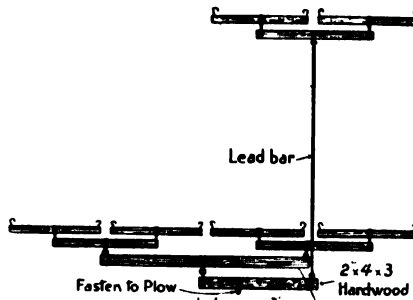
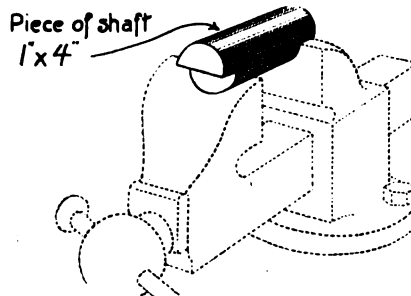


Diagram Showing a Good Six-Horse Hitch.

bottom gang plow.—DALE STARK, Huntley, Mont.

To Bend Iron

OFTEN the horn of an anvil is not suited to get just the right bend wanted in a piece of iron. To get around this difficulty I made a shaper to fit into a vise. I took a piece of one-inch steel shaft about four inches long and three-fourths inch, from each



Steel Form to Put in Vise for Bending Iron.

cut out a piece one-half inch of its thickness. This I screwed into the vise as shown in the accompanying illustration. Over this piece of steel I can bend iron so that the bend is perfect, and can make almost a complete circle if wanted. This will be found a handy device in any farm shop.—H. A. WILL, Shirley, Illinois.

Plant Strawberries in Early Spring

EARLY spring, while the ground is still moist, is considered the best time for setting strawberry plants, say the fruit men at the New York State College of Agriculture. They may be set any time during the spring, summer, or early fall, but best results are usually obtained from early-spring planting. Those set late in the spring or summer are likely to suffer from dry weather. Even tho moisture conditions are favorable, it is usually impossible to get as good a stand of vigorous, well-de-

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WHEN WRITING ADVERTISERS PLEASE
MENTION FARM MECHANICS

veloped plants when other than early-spring planting is practiced.

Setting plants in the fall under favorable winter conditions may succeed. The main objections to fall planting are that the plants may dry out before becoming established in the soil, thus necessitating the filling of the vacancies in the spring, and also that, unless carefully mulched, there may be winter injury. With fall planting, moreover, the plants have to go thru two winters before fruiting, thus doubling the likelihood of damage by winter injury. Fall-set plants, further, need more or less hand hoeing in the spring, to loosen the soil near the plants and to rid the field of weeds; this cannot be done successfully with a cultivator.

Most successful growers agree that early-spring planting is to be preferred to planting at any other season.



Home Grown Grape Plants

THE grape vine is one of the easiest fruit plants to propagate, according to the horticulturists of the University of Nebraska Agricultural College. Any amateur can grow them at home. For filling a vacancy in a vineyard the easiest and surest way is to leave a cane unpruned on a neighboring vine. In the spring lay the vine down and cover with 3 to 4 inches of loose dirt that part which is in the place where a new vine is wanted. By fall the covered part will have produced sufficient root growth to allow the parent cane to be cut away. If several plants are desired the entire cane may be covered with dirt. Nearly every bud will produce a plant. The following spring the plants may be separated with a sharp spade and transplanted.



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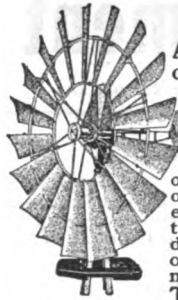
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The **Auto-oiled Aermotor** after 8 full years of service in every part of the world has proven its ability to run and give the most reliable service with one oiling a year. The double gears, and all moving parts, are entirely enclosed and flooded with oil all the time. It gives more service with less attention than any other piece of machinery on the farm. To get everlasting wind-mill satisfaction buy the Auto-oiled Aermotor, the most efficient windmill that has ever been made.

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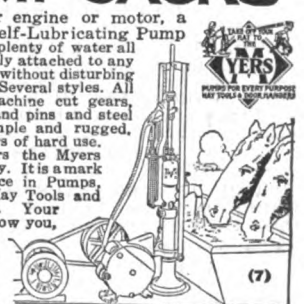
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FOR SALE

FOR SALE—Waukesha Tractor Engine, 4½ x 5½, complete with clutch, magneto, etc. 14" P. & O. Three-bottom Tractor Plow. Have been used very little. For sale cheap. **THE OTTO KONGSLOW MFG. CO.**, 3510 Perkins Ave., Cleveland, Ohio.

Candling Eggs

AN ordinary hand lamp, a lantern, an incandescent bulb, or a flash light may be used. Any box large enough to hold the lamp, set on end, can be used for a case. Besides the hole in the side opposite the light there should be a hole in the top end; otherwise the heat from the light would fire the box. A tester chimney such as is used on a lamp for testing eggs in incubation may be used for candling.

For convenience the light should be placed on a table or shelf. The eggs to be tested should be placed at one side of the light, while on the opposite side receptacles for the good and bad eggs should be provided. Each egg should be examined alone by holding it, large end up, close to the light. A perfectly good, fresh egg shows "full" and clear before the light; there is almost no air cell at the large end, and the yolk outline is only faintly discernible. A fixed air cell of ⅓ to ⅔ of an inch in depth indicates a fresh egg, as eggs run in general. A larger air cell with a mobile lower line indicates—according to size and fluctuation—a stale egg, or one becoming weak and watery.

Very small spots which are apparent in the egg are usually blood clots. Large spots, rings, and shadows are due to heat and germination and indicate decomposition in the first stages. An egg that

is opaque except for a large fixed air cell contains a chick dead at an advanced stage of decomposition. An opaque egg with large air cell having a mobile lower line is in an advanced stage of fluid decomposition. Eggs showing soiled spots or rings can often be utilized by breaking them and separating the bad part.



American Tractors Beat Australian

A PLOWING trial at Trangie, New South Wales, under the supervision of the New South Wales Department of Agriculture, in which six tractors took part, is reported to the Department of Commerce by Trade Commissioner J. W. Sanger. Three of the tractors were of American make; the others were the Renault (French), Fiat (Italian), and the Jelbart (Australian).

The test was an extremely severe one, the site selected being a flat paddock, with a hard-packed surface. The soil was mostly red loam, and there were numerous stumps and roots just under the surface. There were also some raw, sandy and scalded patches. All the tractors were worked as one-man outfits, but where assistance was rendered in making adjustments, the time so taken was figured as running time. One hour was allowed in the evening for all adjustments and for care of machines. The paddock was divided into two for the purpose of equalizing as far as possible the nature of the soil available for each machine, and each tractor was required to plow one block on the first portion, and then another on the second. The plots allotted to each varied from 66.2 to 70 acres.

The Jelbart and Fiat tractors were withdrawn before their lands were completed, and the total cost per acre of the others was \$1.23, \$1.28, and \$1.33 for the three American tractors, respectively, and \$2.08 for the Renault. The time taken to plow was 54 hours 7 minutes, 59 hours 50 minutes, and 61 hours 56 minutes for the three American tractors, and 53 hours 57 minutes for the Renault.



A LITTLE fairy is a great joy in any home, but she's a bigger asset if dressed in gingham and muslin than she would be in velvet and silk. Simple clothes make happy children.



HEALTH fairies make their homes in the bottom of very glass of pure water a child drinks.



THE trouble with many an egg is not that it wasn't boiled long enough, but that it wasn't boiled soon enough.

Farm Facts

Condensed Items of Interesting Information

German hogs are in hard luck. Short-are of barley, which formerly came from Russia, and the increased consumption of potatoes because of their substitution for bread, is making it a problem for German swine raisers to feed the animals. The hog now is on a basis with domestic animals, getting table scraps for its food. Under the circumstances the German market for American hog products is good.

Night air affects cheese. In Normandy, from which the United States gets its camembert cheese, the cattle are kept on pasture day and night, the night air, it is claimed, having an effect on the quality of the cheese produced from the milk. Quantity of milk is reduced by this practice, but the quality is better.

Chinese are substituting milk for tea, the use of the condensed milk as a beverage having grown to enormous proportions during the last few years. However, the Chinese make no use of fresh milk either as a beverage or on their tables, altho the milk produced from water buffaloes and other cattle is heavy with butter fat, it ranging as high as 10 to 11 per cent.

A "corner" in Mexican wheat has caused the government to reduce the import tax, creating a greater market for American wheat and flour in that country. Several merchants and millers have bought up 90 per cent of the local wheat supply and have raised the price of flour 20 per cent.

A new apple with no core or seeds has been discovered in Canada. At Abbotsford a seedless and coreless variety of the Fameuse apple has been developed which varies little in shape from the ordinary Fameuse. The discovery was made by accident, but as no record from the trees the apples came from was kept, it will not be until after the next crop that it can be developed commercially. The apples came from a new block of Fameuse trees, eight years old. They had been top grafted on Rabka seedlings.

Australians turn cattle into flour. Owing to the great surplus of beef cattle in Australia, the carcasses are being dried and ground by a special process, the result being beef flour. The flour is really next to raw beef, as during the process the beef is not cooked but dried at a low temperature. Owing to its fine form, the meat flour is cooked more quickly than ordinary meat.

Japanese are going to raise bullfrogs,

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NOTICE TO ADVERTISERS

Forms for the May number of Farm Mechanics will close promptly April 15. New Copy, changes and orders for omissions of advertisements must reach our business office, 1827 Prairie Ave., Chicago, not later than the above date. If new copy is not received by the 15th of the month preceding date of publication the publishers reserve the right to repeat last advertisement on all unexpired contracts.

FARM MECHANICS.

a number of them recently having been imported from the United States to that country. They will be turned loose in the irrigation ditches and rice fields and are expected to be not only profitable as an article of food, but in killing insects.

Bananas from Mexico are now reaching Los Angeles regularly by special refrigerating boats. The fruit is landed in Los Angeles within a week or ten days after loading.

Flour mills are being established in India, which will cut down the export of wheat from that country. Heretofore most of the wheat flour used in that country has been imported.

Cuba imports butter and eggs, the natives being fond of these foods, while the country is not able to produce enough to supply the demand. In one year 15,000,000 dozens of eggs were imported from the United States.

WHEN you're cutting meat, don't cut toward you, or hold the knife so that it would hit the other hand if it slipped.

WHAT'S the use of having a lot of kitchen knives if they're not kept sharp? That's a simple matter, if every housewife keeps a good steel.

A LOT of coal won't help if the furnace isn't working right. Meat, starches and sweets may be the fuel foods in winter, but fruit and vegetables keep the apparatus in good shape.

THEY may call it a "tea wagon" but the biggest contribution it can make to saving work is carting the used dishes from dining room to kitchen.

ALL is not silk that glistens. Pure silk being expensive, many substitutes and adulterations have been developed. A vegetable product of high luster is substituted for real silk, either used alone or woven with cotton. Silk is often weighted with salts of tin, iron or lead. Cotton is frequently combined with it.

WHERE alfalfa and red clover fail, why not give alsike clover a trial?

Investigate This All Steel CHAINLESS Bucket Elevator

**Only Half the Moving Parts of Other
Bucket Elevators—Saves Repairs
and Replacements—Uses Less
Power—Is Everlasting**

Costs No More Than Ordinary Inside Elevators

The "All-Steel" CHAINLESS Bucket Elevator eliminates all the evils of wood construction. It is the only real improvement in grain elevators in ten years.

It is All Steel throughout. Steel racks to carry the buckets. Steel head section. Steel boot. Welded steel buckets, rolled edge, 7x7x16 inches, holding full peck when LEVEL full. An All-Steel Bucket Elevator—PLUS the advantage that it is chainless.

Practically does away with all repairs—and trouble.

**Only 1 Shaft—2 Sprockets and
2 Bearings—These In Boot**

In the All-Steel Chainless Bucket Elevator there are only half the moving parts of other inside elevators. And everyone knows that fewer parts mean less trouble.

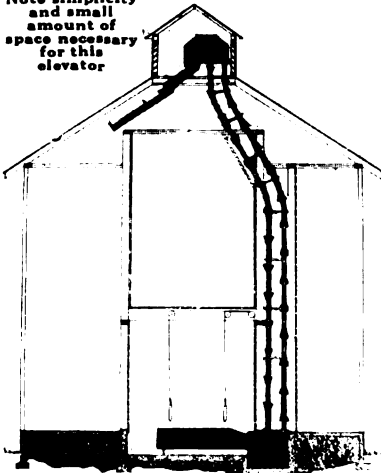
Most elevators have from 3 to 5 shafts above the boot. Which means from 6 to 10 bearings and 8 to 12 sprockets. While on the All-Steel CHAINLESS Bucket Elevator there is only 1 shaft, 2 sprockets and 2 bearings, and these are in the boot—within 6 inches of the floor of your crib. None in head section.

Other superiorities are: Less draft; roller bearing construction; elimination of rats in corn; 3-16 inch boiler steel for boot and head section; capacity not diminished, although less power is required; takes up less space in the crib; only small cupola necessary; no adjustments; easily installed.

You should investigate today. This elevator is everlasting—it spells COMPLETE SATISFACTION—can be installed in ANY style crib. Ask for literature.

**Showing This Wonderful Elevator
Installed In Our**

Note simplicity
and small
amount of
space necessary
for this
elevator



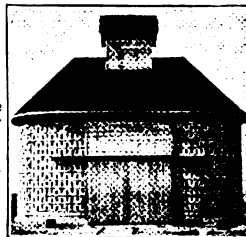
Concrete Ventilated Stave Corn Crib and Granary

"The Crib That Breathes"

With this remarkable bucket elevator installed in the Concrete Ventilated Stave Corn Crib and Granary you have a grain storage that is unsurpassed. Both are PERMANENT—they will last forever.

Perfect ventilation conditions and dries out most immature grains and softest corn. Brings top prices. Has more food value. Because of this efficient ventilation this crib is called "The Crib That Breathes."

Fireproof, rainproof, ratproof—saves grain and saves insurance. Cheaper than wood or tile because of no painting, no repairing, no rebuilding.



Portable Elevator Mfg. Co.
868 McClun Street
Bloomington, Ill.

On the Farm of L. M. Beaver,
New Holland, Ill.



Passing the Buck

"Why do we permit Paris to dictate our fashions?"

"We wouldn't dare make the kind of clothes we like to wear," answered Miss Cayenne. "So we pay Paris a little extra for taking the blame."



A Relic

She—What is this dark hair doing on your coat?

He—That is the suit I wore last year. I expect the hair has been on it ever since you were a brunette, dearest.—Judge.



Famine Threatened

"I've had a hard day at the office, dear, and I'm hungry as a bear. Is dinner ready?"

"No, love, I'm afraid we'll have to go to a restaurant tonight. I've broken the can-opener."—Judge.



Everybody's Doing It

Lots of folks that laugh because it takes 5,000,000 rubles to buy a pair of shoes in Russia are saving cigar coupons over here to get a grand piano.—Life.



Quite Another Matter

Irate Papa—No, sir. My daughter can never be yours.

Bright Suitor—Quite right, sir. She cannot possibly be my daughter. I only wanted her to be my wife.



Set Upon

He—Why are the Western prairies flat?

She—Because the sun sets on them every evening.



Full Credit Desired

An arithmetic teacher was quizzing her class, and asked little Johnnie if he knew the multiplication tables.

"Sure!" said Johnnie.

"How much is three times eight?" asked the teacher.

"Twenty-four," from Johnnie.

"That's very good, very good, indeed, Johnnie," commended the teacher.

"Very good? Halifax!" exclaimed Johnnie, "that's perfect!"

Oliver Plows and Farm Implements

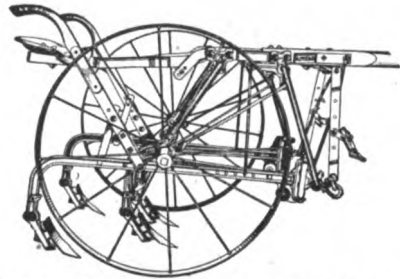


Cultivators Built As You Want Them

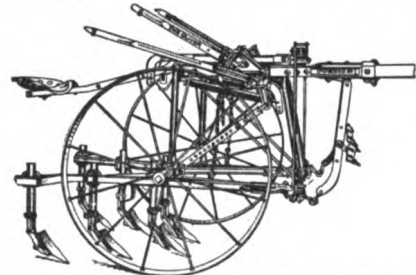
OLIVER cultivators possess the same high quality material and workmanship as the famous Oliver plows. Like all Oliver implements, they are designed to meet the conditions that you actually experience in the field. Each cultivator has been built to produce the quality of work that means greater crop returns. The number now in use evidences the fact that they are a profitable implement to own.

It is a real pleasure to operate these cultivators because of their ease of handling, light running and the quality of work produced.

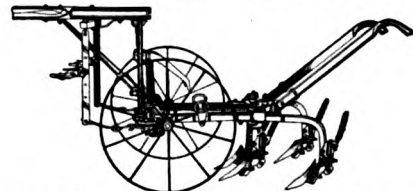
You will find your local dealer glad to furnish you an Oliver cultivator exactly suited to your local conditions.



The new Oliver No. 33 cultivator built just for the corn belt farmer has proved that a simple, low priced implement will do everything needed for the proper care of corn.



The Oliver No. 1 Improved cultivator is the original seat guide parallel gang type of cultivator. Its frame will accommodate shovel, spring tooth or disc gangs.



The Oliver No. 2 walking cultivator has demonstrated for years its suitability to do good work where a light, simple and easily operated walking cultivator is required.

Oliver Chilled Plow Works

Plowmakers for the World

SOUTH BEND,

INDIANA

COST—FREE TO YOU!

New Enlarged Edition of "HANDY ANDY ON THE FARM"

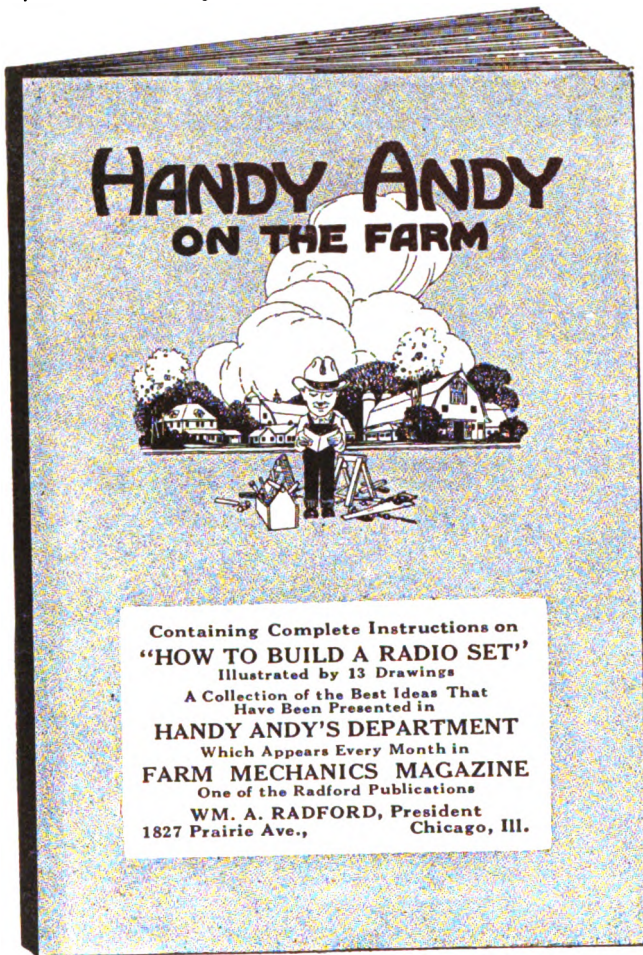
Containing Complete Directions on
HOW TO BUILD A RADIO SET

Handy Andy has given thousands of copies of His Book to readers of FARM MECHANICS. The first edition is exhausted. The second edition has been greatly enlarged and contains complete instruction on "How to Build a Radio Set." The instructions are accompanied by thirteen drawings, which make it comparatively easy for the builder to construct the set, which will enable the owner to receive messages from stations 1,000 miles away.

Handy Andy wants to give every subscriber to Farm Mechanics a copy of his new book free. All you have to do is to send in \$1 for a year's subscription. If your subscription has not expired it will be extended for one year, but your copy of "Handy Andy on the Farm" will be sent to you at once. *It's Free.*

Table of Contents—Handy Andy on the Farm

- | | |
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| <p>Handy Andy in the Farm Shop.
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Improved Seed Flat.
An Adjustable Gate.
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Double-Blade Buck Saw.
To Rescue Mired Animals.
Gate-Closing Device.
Hog House Door Covering.
Tongue for Bookie.
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Modern Farm Building Designs
Dutch Colonial House.
Square Hip-Best House.
Home for the Work Week.
Dairy Barn for 30 Cows.
Where the Corn Crop Is Safe.
Implement and Machinery Shed.
Saw-Tooth Roof Hog House.
A Good Colony Poultry House.</p> |
|---|--|



Containing Complete Instructions on
"HOW TO BUILD A RADIO SET"
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A Collection of the Best Ideas That
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HANDY ANDY'S DEPARTMENT
Which Appears Every Month in
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Also included in "Handy Andy on the Farm"
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FARM MECHANICS, 1827 Prairie Ave., Chicago, Ill.

Gentlemen: Enclosed find \$1.00 for which enter or extend my subscription to Farm Mechanics for one year. Also send me my copy of "Handy Andy on the Farm," free and postage paid.

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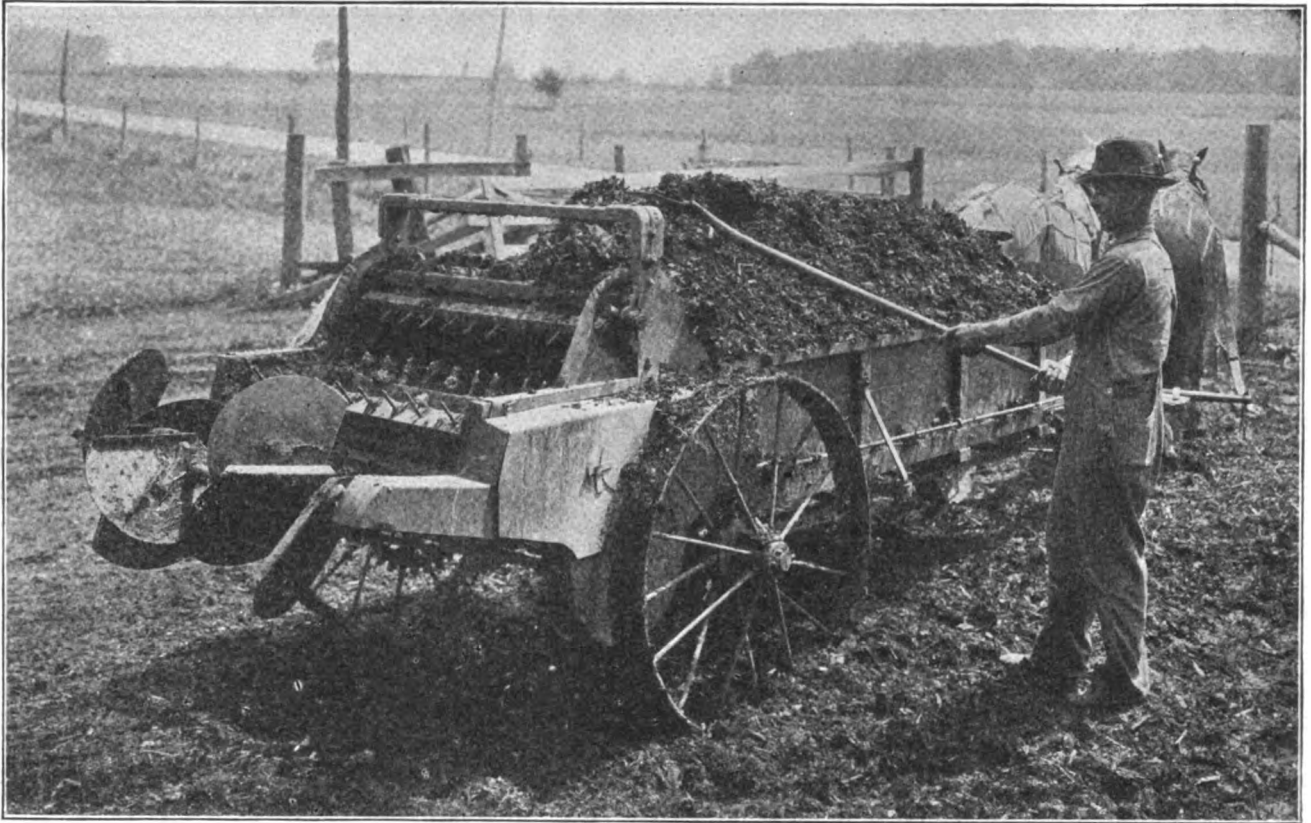
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Easy to Load—Easy to Spread

YOU'VE heard, time and again, of the easy loading quality and the wonderfully light draft of the New Idea and Nisco Spreaders. Here is a photograph that gives you a picture of the way you can pile a peak load on the New Idea and Nisco—and literally “get away with it”. This man has heaped up a load until no more manure will stay on the Spreader. Yet two horses easily “got away” with the load—pulled it out of the barn-yard, up a short hill and out onto the field.

NISCO

The Original Wide Spreading Spreader

New Idea and Nisco Spreaders are built low so that they are extremely easy to load. No long shields in the way—no lever rods or chains. Nor does the rear wheel interfere with loading. And the light draft of this Spreader is a by-word among its owners. It is a fact—unquestioned, undisputed.

Why take a chance on buying an imitation when you can have the original New Idea or Nisco at a price as low or only slightly higher than inferior makes.

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The New Idea Spreader Co.
“Spreader Specialists”
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Twenty years of specialized effort in building manure spreaders have developed the New Idea and Nisco Spreaders to a point where these “Original Wide-Spreading Spreaders” stand—recognized leaders in the mind of the American farmer. *When you buy a New Idea or a Nisco, you buy the best.*

The New Idea Spreader Co.
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Gentlemen:

Please send me full particulars on New Idea and Nisco Spreaders.

Name.....

Address.....

Both Winter and Summer 451 Makes of Cars

Automobile Chart of Recommendations

Name of Car	Summer Motor Oil	Name of Car	Summer Motor Oil
Ace.....	M.	Kurtz.....	M.
Ambassador.....	M.	Lafayette.....	M.
American.....	M.	Leach.....	H.
Anderson.....	M.	Lexington.....	M.
Apperson.....	H.	Liberty.....	M.
Auburn.....	M.	Lincoln.....	M.
Barley.....	M.	Loomobile.....	M.
Bay State.....	M.	Marmon 34.....	H.
Beggs.....	M.	Martin Wasp.....	H.
B-E-L—		Maxwell.....	M.
Model A.....	H.	McFarlan.....	H.
All other Models.....	M.	Merco 4.....	H.
Bell.....	M.	Merco 6.....	H.
Biddle.....	H.	Metropolitan.....	M.
Birch—		Mitchell.....	M.
Model 30-306.....	H.	Monroe.....	H.
All other Models.....	M.	Moon.....	M.
Bour-Davis.....	M.	Nash.....	M.
Bournonville Rotary.....	H.	National 6-40.....	M.
Brewster.....	S. H.	National 6-71.....	H.
Buick.....	M.	Nelson.....	M.
Bush.....	M.	Noma—	
Cadillac.....	M.	Model 3-C.....	H.
Case.....	M.	All other Models.....	M.
Chalmers.....	M.	Northway.....	M.
Champion.....	M.	Oakland.....	H.
Chandler.....	M.	Oldsmobile.....	H.
Chevrolet.....	M.	Overland.....	M.
Cleveland.....	M.	Packard.....	M.
Climber.....	M.	Paige.....	M.
Cole.....	M.	Patterson.....	M.
Columbia.....	M.	Peerless.....	H.
Comet.....	M.	Pierce Arrow.....	M.
Corinthian.....	M.	Pilot.....	M.
Courier.....	M.	Premier.....	M.
Crawford.....	M.	R & V Knight.....	S. H.
Cunningham.....	M.	Reo.....	M.
D A. C.....	S. H.	Revere.....	H.
Dagmar.....	M.	Rickenbacker.....	M.
Daniels.....	M.	Riddle.....	M.
Davis.....	M.	Roamer—	
Dixie Flyer.....	M.	Cont. Motor.....	M.
Dodge.....	M.	Duesenberg Motor.....	H.
Dorris.....	M.	Rock Falls.....	M.
Dort—		Rolls Royce.....	S. H.
14-19.....	M.	Saxon.....	M.
20-25.....	H.	Sayers Six.....	M.
Driggs.....	M.	Seneca.....	M.
Duesenberg.....	H.	Shad-Wick.....	H.
Du Pont.....	M.	Skelton.....	M.
Durant 4.....	M.	Standard.....	M.
Durant 6.....	M.	Stanwood Six.....	M.
Earl.....	M.	Star.....	M.
Elcar.....	M.	Stearns Knight.....	S. H.
Elgin.....	H.	Stevens Six.....	M.
Essex.....	M.	Sterling—	
Fiat.....	H.	Model M.....	M.
Flint 6.....	M.	Model A.....	H.
Ford.....	M.	Model B.....	M.
Fox.....	H.	Sterling Knight.....	S. H.
Franklin.....	H.	Stevens Duryea.....	H.
Fremont.....	M.	Stratton Premier.....	M.
Gardner.....	M.	Studebaker.....	M.
Grant.....	M.	Stuts.....	H.
Gray.....	M.	Sun.....	H.
Handley Kalamazoo.....	H.	Templar.....	H.
Handley Knight.....	S. H.	Vellie.....	M.
Hanson.....	M.	Vogue.....	M.
Hatfield.....	M.	Waltham.....	M.
Haynes—		Washington.....	M.
Models 48-55.....	M.	Westcott.....	M.
Models 77 & 75.....	H.	Wills Sainte Claire.....	S. H.
H. C. S.....	H.	Willys-Knight.....	H.
Holmes.....	H.	Winther.....	M.
Howard.....	M.	Winton.....	M.
Hudson.....	M.		
Huffman.....	M.	KEY	
Hupmobile.....	M.	L.—Polarine Light.	
Jewett.....	M.	M.—Polarine Medium.	
Jordan.....	M.	H.—Polarine Heavy.	
Kelsey.....	M.	S. H.—Polarine Special	
King.....	H.	Heavy.	
Kiesel Kar.....	H.	E. H.—Polarine Extra	
Kline Kar.....	M.	Heavy.	

N. B.—For recommendation of grades of Polarine to use in tractors and trucks, consult chart in any Standard Oil Co. (Indiana) station.

Polarine lubricates perfectly—in cold weather and in hot—451 different makes of passenger cars, trucks and tractors. No matter how extreme the change of temperature—the grade of Polarine indicated in the Chart will remain of the right viscosity. It will spread rapidly. It will form a perfect film between the moving frictional surfaces. It will insure long life to the bearings; complete protection to piston and cylinder.

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Use

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THE PERFECT MOTOR OIL

Made in Five Grades

It outstrips any lubricant on the market in maintaining its body through any extreme of temperature. Its elasticity and adhesiveness cause a perfect seal and complete lubrication at all motor speeds and temperatures.

Don't fool yourself into fancied security, by thinking, "Oh, the oil I'm using works all right—why bother to change? It's just as good!" There is no "just as good", or even "second best" lubrication. There is one right lubricant for your car. It is specified in the Chart. When you do not use this lubricant, you fail to get the maximum of economy, efficiency and saving of wear on your engine. Change your motor oil every 500 miles—it is the essence of economy.

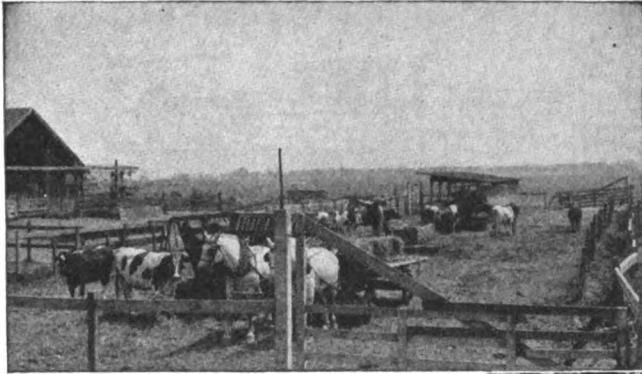
Remember the resources—the experience—the scientific experience of the Standard Oil Company (Indiana) are behind every gallon of Polarine sold. This means maintained quality—at all seasons, in all temperatures—and everywhere throughout 10 Middle Western States.



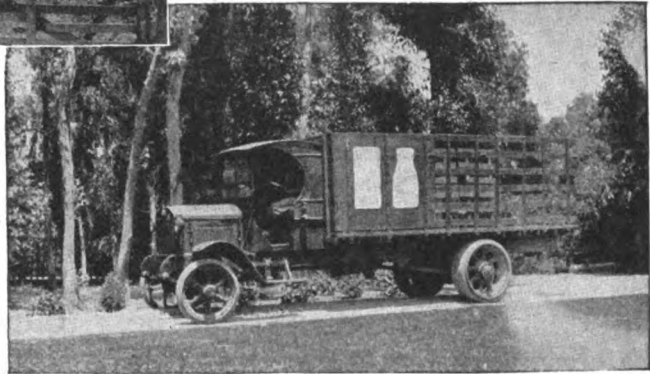
Standard Oil Company

910 S. Michigan Ave. (Indiana) Chicago, Ill.

General Motors Trucks



GMC truck used by the Arden Dairy Company of El Monte, Calif. to haul milk to Los Angeles.



GMC Helps Haul Milk From Herd of 350 Cows

Throughout the Los Angeles territory "Arden Certified Milk" is recognized as the last word in purity and food value. That this reputation is justified is shown in the fact that a bottle of Arden milk was sent across the continent to a New England fair, and there took the prize over the finest milk there.

The Arden Dairy is a large institution, milking about 350 Holstein cows and handling the product by the most improved mechanical methods. Yet this tremendous institution, representing the maximum of efficiency in all its branches, maintains this herd of milk cattle without pasturage facilities of any sort.

The location of the dairy, at El Monte, is some twenty miles distant from Los Angeles, from which point the bottled certified milk is distributed. Two trucks, one a GMC two-ton, are the transportation media for the institution.

By the use of this motor equipment the dairy is enabled to make schedule deliveries of its milk to the city twice each day and to bring from the markets all the supplies necessary for the feeding of the cattle and the operation of the place.

Just what part the trucks, and particularly the GMC play in this operation, is told by Mr. E. B. Carter, president of the company:

GMC Costs Less to Run

"At present we are operating only one GMC truck. However, I do not think it will be long before we are operating the second, because our other truck is getting worn out and the drivers will not be satisfied until it is replaced with a GMC.

"Although the other truck had given us good service, we decided to purchase a GMC for our second, when we learned that we could secure fully as great efficiency at a considerable saving over the other make. Since the time of our purchase, three years ago, the two trucks have been running side by side in the same class of work, but we are frank to say that we have heaped the loads a little higher and used the GMC a little more than the

other, and yet the showing in operation costs are all in its favor.

"Twice each day we load the trucks to more than capacity and send them into Los Angeles, which is the center of distribution for our milk. On the return trip they bring back a load of empty bottles and cases, and supplies for the ranch. You see we do all feeding on a mixed ration basis and there is no pasturage.

Carry Loads Both Ways

"The job of supplying such an institution as this with feed and other things, from a market twenty miles distant, is quite a job in itself, but the possibility of operating our trucks with a full load in both directions is one of the things that makes for economy and helps our earnings.

"Our GMC truck has given us excellent service ever since, and, as I say, we shall probably be purchasing another one soon, which is about the best recommendation we could give as to our satisfaction."

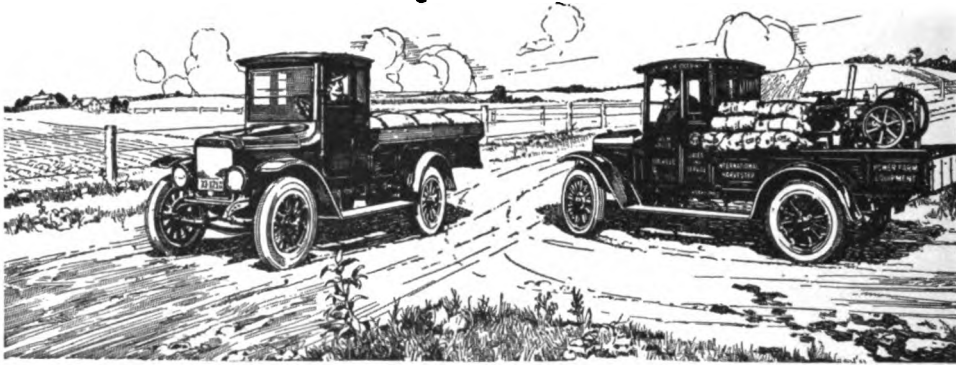
GMC chassis list at the factory as follows: one ton, \$1295; two ton, \$2375; and three and one half ton, \$3600; five ton, \$3950; tax to be added.

GENERAL MOTORS TRUCK COMPANY

Division of General Motors Corporation

PONTIAC, MICHIGAN

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A big factor in the popularity and value of these trucks is the remarkable service we render. Four times a year all Internationals are inspected by factory-trained road engineers traveling out of 93 branch houses. The owner or driver is instructed in the care and operation of his truck; minor adjustments are made and a written report gives the exact condition of the truck. This service is free and it continues during the entire life of the truck.

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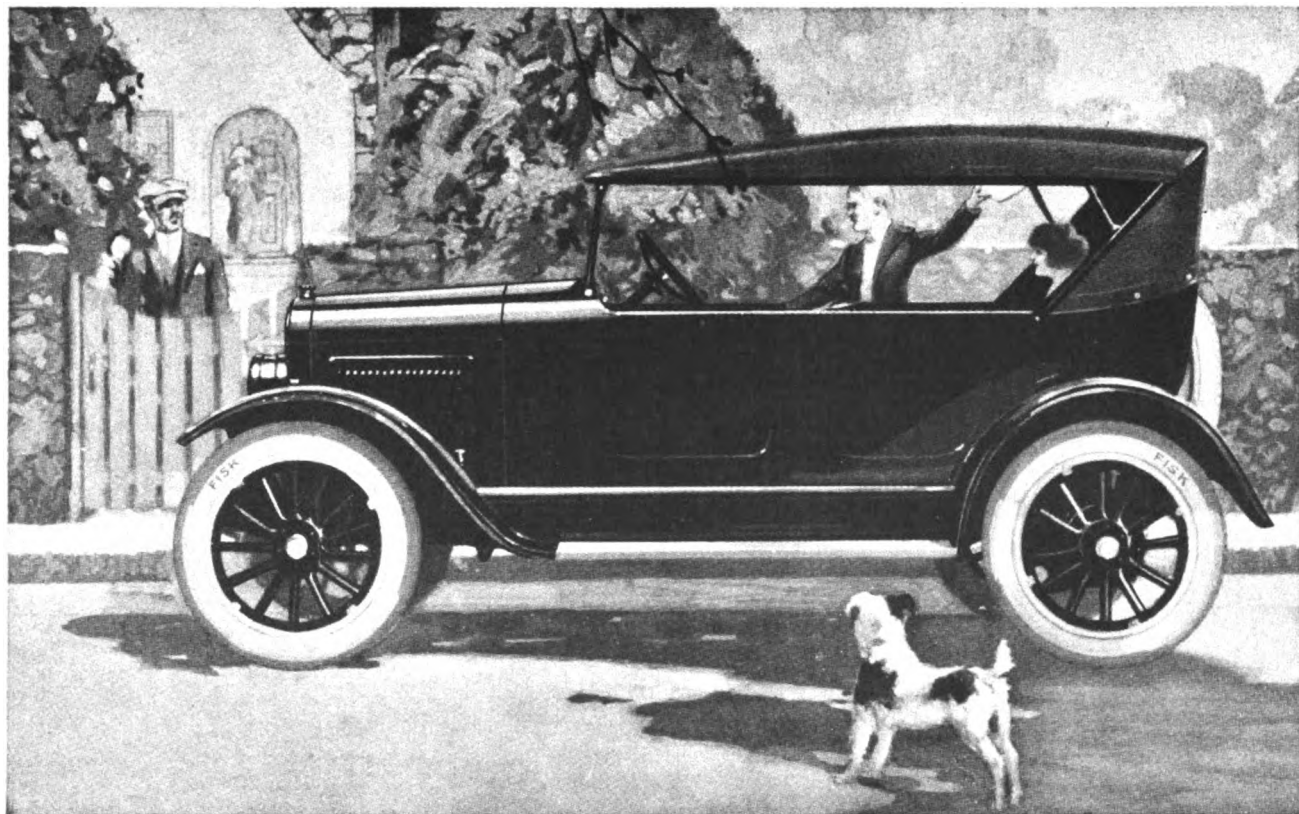
Let motor haulage make your farming easier and more profitable. Own one of these popular trucks—made by the makers of high-quality farm power equipment. Talk the matter over with the McCormick-Deering dealer or the nearest regular International truck dealer. For a catalog, write the address below.

INTERNATIONAL HARVESTER COMPANY

CHICAGO

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(INCORPORATED)

U S A



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The new Overland is the fulfillment of a definite aim. It is the best Overland ever built, and at the lowest price. From all quarters comes recognition of the new Overland as the greatest automobile value in the world today.

No other car anywhere near Overland price has an all-steel body, with lustrous baked-enamel finish—or Triplex Springs (*Patented*), which yield such cradled riding ease. No other light car duplicates its

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Overland is winning praise, too, for its better looks. The hood is higher. Body lines are longer. Seats are lower. And underneath this outward appeal is the dependable Overland engine, smooth, sure and remarkably economical—giving 25 miles and more to the gallon of gasoline.

Drive an Overland and realize the difference.

WILLYS-OVERLAND, INC., TOLEDO, OHIO
Willys-Overland Ltd., Toronto, Ont.

The New
Overland
TRADE MARK REG
Touring **\$525**

Sedan, \$860

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Roadster, \$525

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Coupe, \$795

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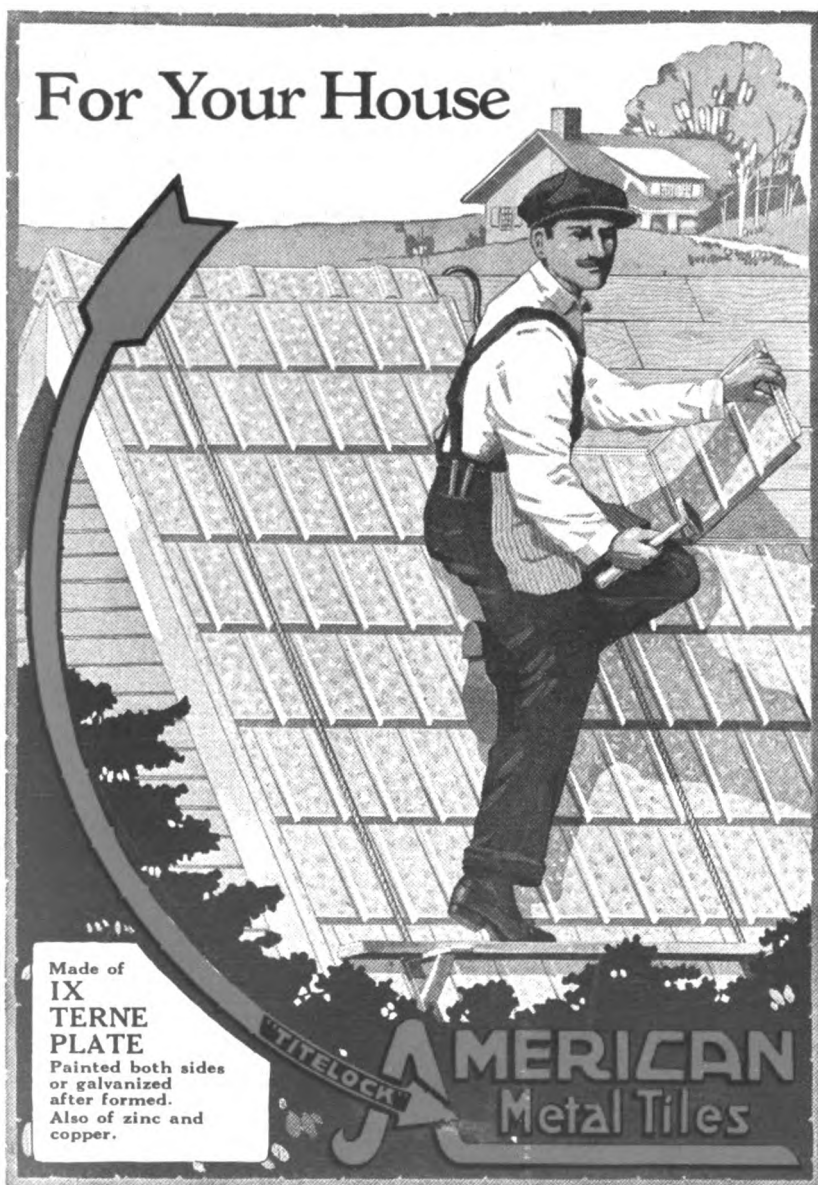
All prices f.o.b. Toledo

The Safety Roof



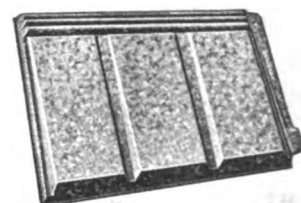
FOR BARNs there is absolutely nothing so safe as metal roofing. A bolt of lightning that would bore a hole thru a paper-base composition or wood shingled roof and set fire to your barn would flow harmlessly off a "MILCOR" galvanized metal roof. This has been decisively proven by artificial lightning produced by electrical engineers, who have succeeded in duplicating the electric phenomenon. It is only necessary to connect the roof by wire to a metal rod or pipe, driven into the ground at the corners of the building. Where drain pipes have been erected they serve the purpose admirably, but it is advisable to connect them by wire at the bottom with a stake as mentioned.

For Your House



Made of
**IX
TERNE
PLATE**
Painted both sides
or galvanized
after formed.
Also of zinc and
copper.

AMERICAN
Metal Tiles



Showing Individual "Titelock"
Metal Tile. Size 10x14"

The same protection against fire and lightning is provided by **Titelock American Metal Tiles**. For residences they are preferred because of the artistic effect of the panels, which are high at the butt, creating a bold distinctive design that is particularly pleasing and specially adapted for residence roofs.

Titelock American Metal Tiles are wonderfully durable, with a clean smooth surface. Nothing to wash off to discolor the rain water or clog the drain pipes.

Ask your dealer for **Titelock American** or **Titelock Spanish** metal tiles.

Safety Roof Booklet sent on Request.



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CORRUGATING
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